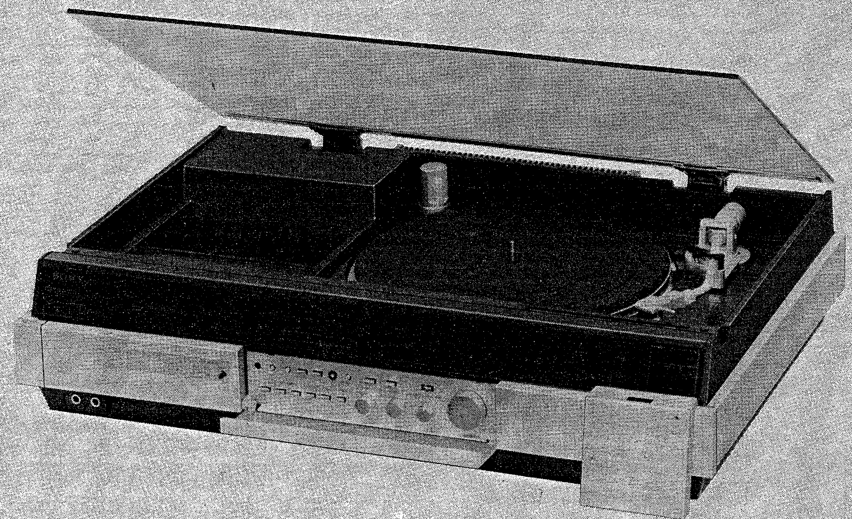
HMK-9000

AEP Model
E Model
UK Model

673



STEREO MUSIC SYSTEM

SPECIFICATIONS

TUNER SECTION

FM tuner section

Tuning range	87.5–108 MHz
Antenna terminals	300-ohm balanced 75-ohm unbalanced (UK model)
Intermediate frequency	10.7 MHz
Usable sensitivity	1.8 μV, S/N = 30 dB
Sensitivity at 50 dB quieting	3.5 μV, 16.1 dBf (mono) 10 μV, 25 dBf (stereo)
Signal-to-noise ratio	75 dB (mono)
Harmonic distortion	at 400 Hz 0.1% (mono) 0.5% (stereo)
Separation	Better than 40 dB
Frequency response	30 Hz–15 kHz ±3 dB
Muting threshold	Approx. 7 μV

'Dolby' and the double-D symbol are the trade marks of Dolby Laboratories. Noise reduction system manufactured under license from Dolby Laboratories.

SAFETY-RELATED COMPONENT WARNING !!

COMPONENTS IDENTIFIED BY SHADING AND MARK ⚠ ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

MW/LW tuner section

	MW	LW (AEP, UK model)
Tuning range	522 kHz–1,602 kHz	150 kHz–350 kHz
Antenna	Built-in ferrite bar antenna, External antenna terminal	
Intermediate frequency	450 kHz	
Usable sensitivity	50 dB/m, built-in antenna (1,000 kHz) 150 μV, external antenna (1,000 kHz)	55 dB/m, built-in antenna (250 kHz) 150 μV, external antenna (250 kHz)
Signal-to-noise ratio	55 dB (50 mV/m)	
Harmonic distortion	0.5% (50 mV/m, 400 Hz)	
Selectivity	45 dB (9 kHz)	

— Continued on page 2 —

SONY®

SERVICE MANUAL

CASSETTE RECORDER SECTION

Fast-forward and rewind time	Approx. 70 sec. (with C-60)
Recording system	4-track 2-channel stereo
Bias frequency	105 kHz
Signal-to-noise ratio	DOLBY NR OFF •With TYPE III cassette (Sony FeCr cassette) 58 dB (NAB) 56 dB (DIN, 1975 rev.) •With TYPE II cassette (Sony CD-α cassette) 56 dB (NAB) DOLBY NR ON Improved by 5 dB at 1 kHz, 10 dB above 5 kHz
Total harmonic distortion	1.5% (with Sony FeCr cassette)
Frequency response	DOLBY NR OFF •With TYPE IV cassette (Sony METALLIC cassette) 20–19,000 Hz 30–17,000 Hz (±3 dB) 30–13,000 Hz (±3 dB, 0 VU recording) •With TYPE III cassette (Sony FeCr cassette) 30–17,000 Hz (±3 dB) •With TYPE II cassette (Sony CD-α cassette) 30–16,000 Hz (±3 dB) •With TYPE I cassette (Sony BHF cassette) 20–15,000 Hz
Wow and flutter	0.04% WRMS (NAB) ±0.14% (DIN)

TURNTABLE SYSTEM SECTION

Turntable

Platter	31.8 cm (12½ in.), aluminum-alloy diecast
Motor	Linear BSL (brushless and slotless)
Drive system	Direct drive
Servo system	Xtal-lock, Magnedisc servo control
Speeds	33⅓ rpm, 45 rpm
Wow and flutter	0.03% (WRMS) ±0.045% (DIN)
Signal-to-noise ratio	70 dB (DIN-B)
Automatic system	Lead-in, return, reject, repeat, record size and speed selection

Tonearm

Type	Electronically controlled, universal
Pivot-to-stylus length	216.5 mm (8½ in.)
Overhang	16.5 mm (21/32 in.)
Tracking force adjustment range	0–3 g
Headshell weight	10.5 g
Cartridge weight range (with headshell)	14.5–20.5 g

Cartridge VL-34G

Type	Moving-magnet type
Frequency response	10 Hz–30 kHz
Channel separation	Better than 25 dB at 1 kHz
Output voltage	3 mV at 1 kHz, 5 cm/sec, 45°
Tracking force	1.5–2.5 g (2 g recommended)
Stylus	Sony ND-134G (Conical 0.6 mil diamond)
Weight	5.5 g

AMPLIFIER SECTION

Continuous RMS power output (less than 0.2% THD, both channels driven simultaneously)	at 20 Hz–20 kHz 40 + 40 watts (8 ohms) 50 + 50 watts (4 ohms)
Music power	120 watts (8 ohms, THD 0.2%)
Power bandwidth (IHF)	20 Hz–20 kHz

Inputs

	Sensitivity	Impedance	S/N
PHONO (phono jacks)	3.5 mV	47 kilohms	65 dB
AUX (phono jacks)	250 mV	47 kilohms	70 dB
MIC (phone jacks)	1 mV	for low-impedance microphone	60 dB

Outputs

REC OUT (phono jacks)	output voltage 250 mV	impedance 10 kilohms
HEADPHONES	Accepts headphones of 8 ohms or more	
SPEAKER	Accepts speakers of 4–8 ohms	

Frequency response	PHONO: RIAA curve ±2 dB AUX: 20 Hz–50 kHz ±2 dB
Tone controls	BASS: ±10 dB at 100 Hz TREBLE: ±10 dB at 10 kHz
Loudness control (att. 30 dB)	+ 7 dB at 100 Hz + 2 dB at 10 kHz

REMOTE CONTROL SECTION

Remote control system	Infrared control
Control range	Up to 7 m (23 feet)
Demensions	Approx. 95 × 100 × 30 mm (w/h/d) (3¾ × 4 × 1⅛ inches) incl. projecting parts and controls
Weight	Approx. 190 g (6.7 oz)

TIMER SECTION

Clock system	Synchronized with power line frequency
Control time	12-hour system (UK model) 24-hour system (AEP, E model)

GENERAL

System	Superheterodyne FM/AM tuner Direct coupled complementary symmetry power amplifier circuit (SEPP OCL)
Power requirements	240 V ac~, 50 Hz (UK model) 220 V ac, 50 Hz (AEP model) 110 – 120 V ac or 220 – 240 V ac, 50/60 Hz (E model)
Power consumption	360 watts
Dimensions	Approx. 690 × 160 × 545 mm (w/h/d) (27⅛ × 6¼ × 21⅜ inches) incl. projecting parts and controls
Weight	Approx. 25 kg (55 lb 2 oz) net Approx. 28.5 kg (62 lb 14 oz) in shipping carton

0 dB = 0.775 V

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Handling Precautions for MOS ICs

Generally, the insulation resistance of the oxide layer in MOS IC structures is very-high, and the oxide layer is very thin. Because of this, it is possible that the static voltages usually present on clothes and the human body will be enough to generate a potential difference across the insulator, high enough to cause a breakdown of the insulating layer.

The following precautions should be taken while handling these ICs.

(Particular care should be taken under conditions of low humidity.)

Precautions in Replacing MOS ICs

1. Store new ICs by inserting them into a urethane-polyester cushion (which is somewhat conductive), or wrapping it in aluminum foil, so that all the pins are at the same potential.
   (The ICs should be stored in that manner until mounted on the circuit board.)

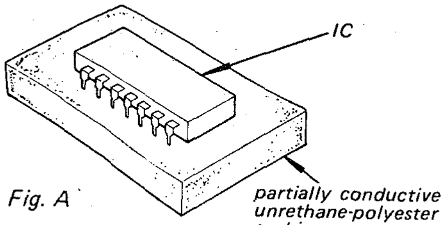


Fig. A

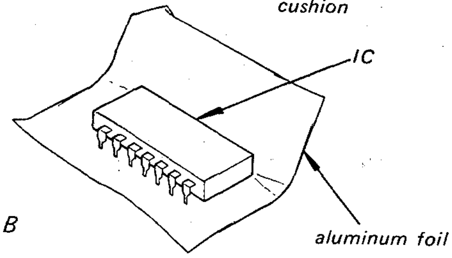


Fig. B

2. Check the soldering iron for possible power-line leakage current. Make sure that there is no leakage path by connecting an ohmmeter to the tip of the soldering iron and the plug as shown in Fig. C. If there is a leakage path, use some other soldering iron.

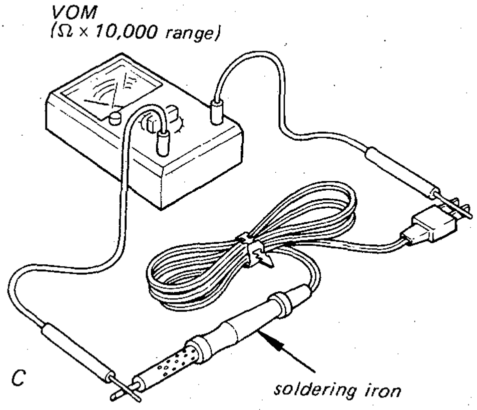


Fig. C

3. Equalize any potential difference between the clothes, the tools in use, the work bench, the set being worked on, and the packaged IC by touching them all in succession with the hands or a conductive wire or tool.
4. The following are effective methods for handling ICs that remove the potential difference across the oxide layer.
   - Use a paper clip modified by soldering in a wire braid insert.

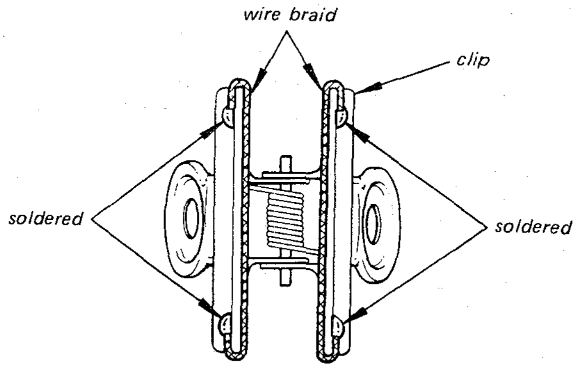


Fig. D

Make sure that there is no solder on the inside.

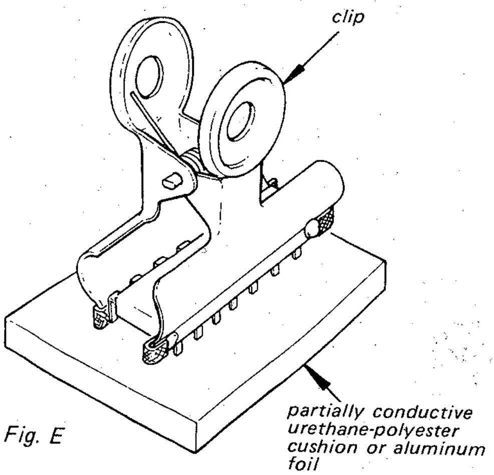

clip
partially conductive urethane-polyester cushion or aluminum foil

Fig. E

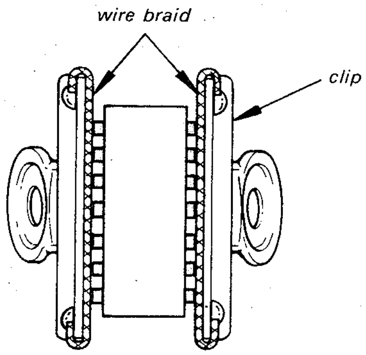

wire braid
clip

Fig. F *Make sure that all the pins are in contact with the wire braid (all the pins will then be at the same potential.).*

- Take a short length of fine bare wire and wind it around the IC so that it shorts all the pins of the IC, while it is still in the urethane-polyester cushion or aluminum foil. This ensures that all the pins are at the same potential.

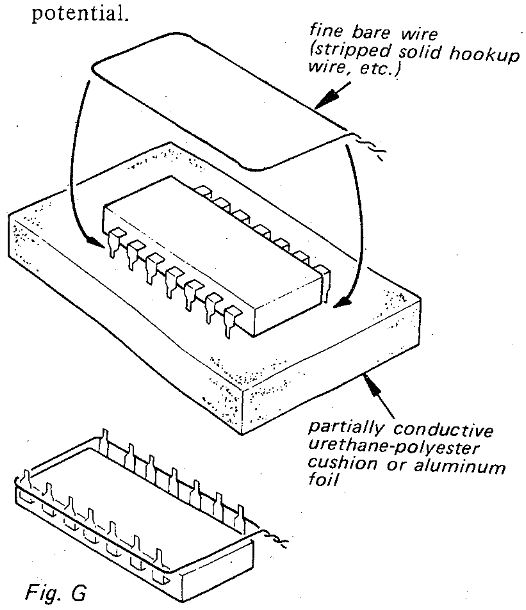

fine bare wire (stripped solid hookup wire, etc.)
partially conductive urethane-polyester cushion or aluminum foil

Fig. G

- When it is necessary to handle the IC with the fingers, do not touch any pin, and hold the IC at the ends of its plastic-package case as shown in Fig. H.

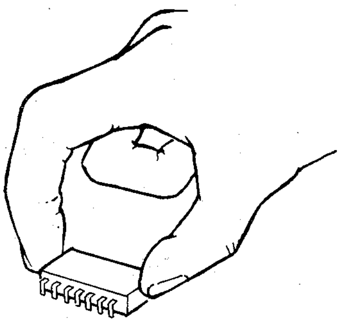


Fig. H

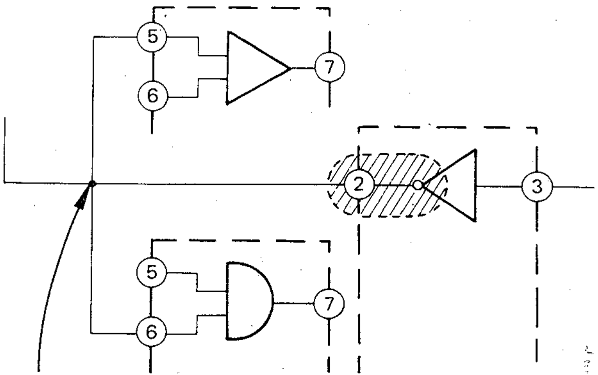
5. Method of Mounting
   Insert the IC while holding it with the modified clip, and solder all the pins with the clip still shorting the pins. (Similarly, solder all the pins while the bare shorting wire is still wound around them.). Remove the clip or the bare shorting wire only after all the pins have been soldered.

Precaution while Checking C-MOS ICs

The C-MOS ICs (Complementary MOS) are MOS ICs that have their output sections made up of N-channel and P-channel push-pull stages to increase their speed of operation. If the output terminal of these ICs comes into contact with B+ or B– voltage, then the FET which is ON at that time will either become shorted or open.

This is valid for all the output sections that are connected together by the interconnections. Even the circuits that are physically separated (and not on the same board) can be destroyed simultaneously.

Example:



If this line is grounded, or touches B+ or B– bus . . . , the output stage of this IC will be destroyed.

Fig. I

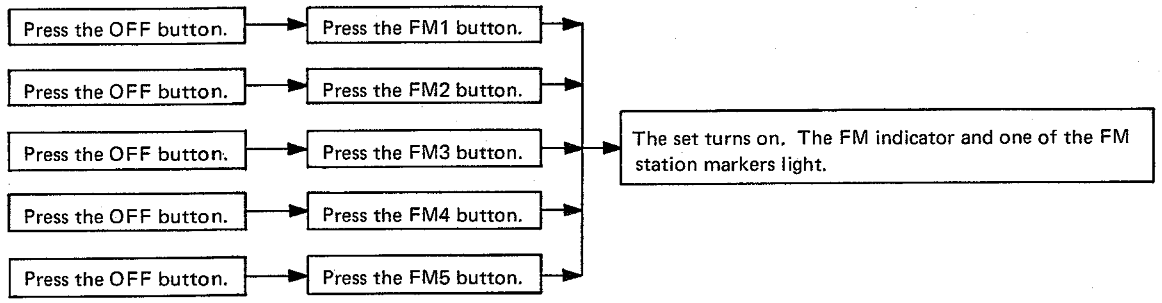
SECTION 1
OUTLINE

1-1. OPERATING CHECKOUT

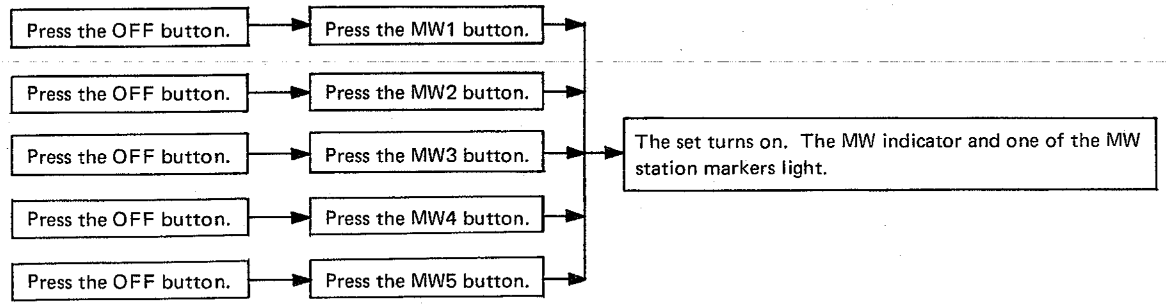
1. Receiver Section

Setting: Control Unit: attached on the set
STAND BY switch: ON
TIMER switch: OFF
SLEEP switch: OFF
PRESET VOL control: MAX

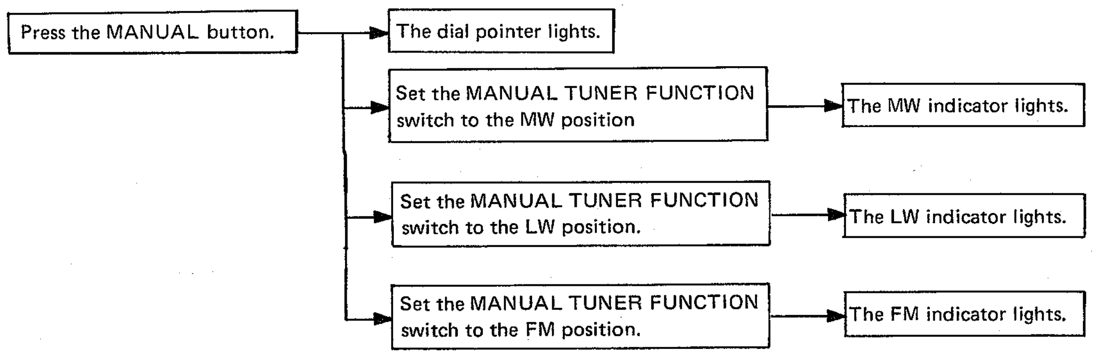
a)


Press the OFF button.
Press the FM1 button.
Press the OFF button.
Press the FM2 button.
Press the OFF button.
Press the FM3 button.
Press the OFF button.
Press the FM4 button.
Press the OFF button.
Press the FM5 button.
The set turns on. The FM indicator and one of the FM station markers light.

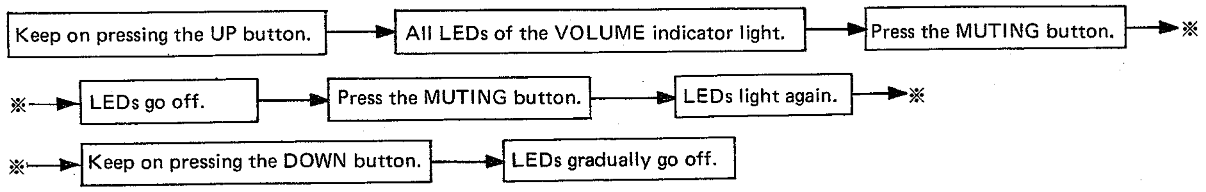
b)


Press the OFF button.
Press the MW1 button.
Press the OFF button.
Press the MW2 button.
Press the OFF button.
Press the MW3 button.
Press the OFF button.
Press the MW4 button.
Press the OFF button.
Press the MW5 button.
The set turns on. The MW indicator and one of the MW station markers light.

c)


Press the MANUAL button.
The dial pointer lights.
Set the MANUAL TUNER FUNCTION switch to the MW position
The MW indicator lights.
Set the MANUAL TUNER FUNCTION switch to the LW position.
The LW indicator lights.
Set the MANUAL TUNER FUNCTION switch to the FM position.
The FM indicator lights.

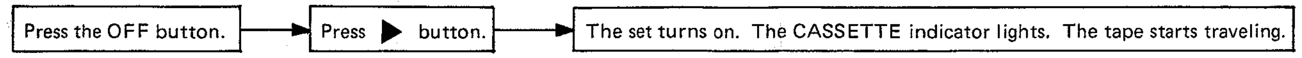
d)


Keep on pressing the UP button.
All LEDs of the VOLUME indicator light.
Press the MUTING button.
※
※
LEDs go off.
Press the MUTING button.
LEDs light again.
※
※
Keep on pressing the DOWN button.
LEDs gradually go off.

2. Cassette Recorder Section

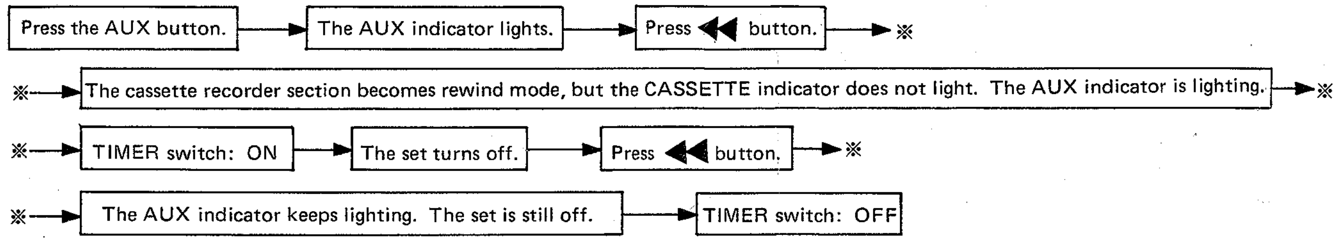
Setting: Insert a cassette tape.
Control Unit: attached on the set
STAND BY switch: ON
TIMER switch: OFF
SLEEP switch: OFF

a)


Press the OFF button.
Press ▶ button.
The set turns on. The CASSETTE indicator lights. The tape starts traveling.

* Confirm each operation for ◀◀, ▶▶, REC, AMS (◁ , PROGRAM, ▷) or ❚❚ button.

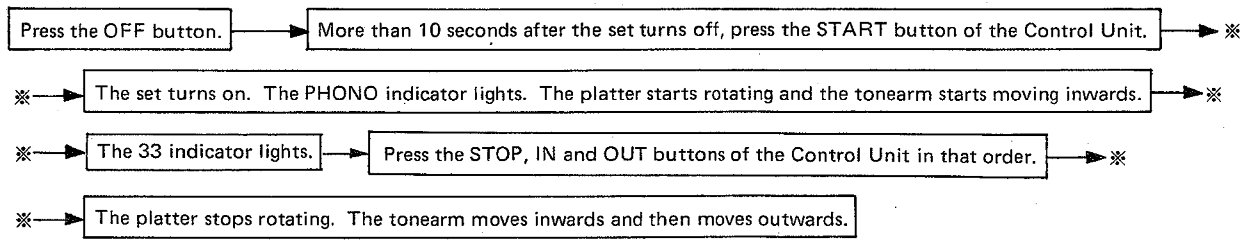
b)


Press the AUX button.
The AUX indicator lights.
Press ◀◀ button.
※
※
The cassette recorder section becomes rewind mode, but the CASSETTE indicator does not light. The AUX indicator is lighting.
※
※
TIMER switch: ON
The set turns off.
Press ◀◀ button.
※
※
The AUX indicator keeps lighting. The set is still off.
TIMER switch: OFF

3. Turntable Section (controlled with Control Unit)

Setting: Place a 30 cm disc on the platter.
Control Unit: attached on the set
STAND BY switch: ON
TIMER switch: OFF
SLEEP switch: OFF

a)


Press the OFF button.
More than 10 seconds after the set turns off, press the START button of the Control Unit.
※
※
The set turns on. The PHONO indicator lights. The platter starts rotating and the tonearm starts moving inwards.
※
※
The 33 indicator lights.
Press the STOP, IN and OUT buttons of the Control Unit in that order.
※
※
The platter stops rotating. The tonearm moves inwards and then moves outwards.

* Perform the same procedures for 17 cm and 25 cm discs.

4. Turntable Section (controlled with the buttons of the turntable)

Setting: Place a 30 cm disc on the platter. Insert a cassette tape.
STAND BY switch: ON
TIMER switch: OFF
SLEEP switch: OFF

a) Press the OFF button. → Press the START button of the turntable. → The set does not turn on. → ※

※ → Press the AUX button of the Control Unit. → The set turns on. The AUX indicator lights. → ※

※ → Press the START button of the turntable. → The PHONO indicator lights. The platter starts rotating at 33 rpm. → ※

※ → The tonearm moves inwards. The 33 indicator lights. → Press the STOP, IN and OUT buttons of the turntable in that turn. → ※

※ → The platter stops rotating. The tonearm moves inwards and then moves outwards. → ※

※ → When the tonearm returns to the arm rest, the 33 indicator goes off.

b) Place a 17 cm disc on the platter. → Press the START button of the turntable. → ※

※ → The PHONO indicator lights. The platter starts rotating at 45 rpm. → Press the SPEED button several times. → ※

※ → The 33 and the 45 indicators go on and off alternately. → Press the STOP button of the turntable. → ※

※ → The 33 or the 45 indicator keeps lighting. → Press the OFF button. → Press the AUX button. → ※

※ → The 33 or the 45 indicator goes off.

c) Press the REC SYNC and the START buttons at the same time. → The platter starts rotating. → ※

※ → When the tonearm lowers onto the disc, the cassette recorder starts recording. → ※

※ → When the tonearm returns to the arm rest, the cassette recorder stops recording.

d) Press the REPEAT button. → The REPEAT indicator lights. The repeat operation starts. → ※

※ → Press the STOP button of the turntable. → The REPEAT indicator goes off. → The tonearm returns to the arm rest.

5. Timer Section

Setting: Control Unit: attached on the set

a) Disconnect the power cord. → Connect the power cord. → Figures starts blinking on the display window. → ※

※ → Depress the TIMER button. → The TIMER indicator lights. → ※

※ → While pressing the TIMER/SLEEP SET button, press the FAST or the SLOW button to obtain 10:00 AM. → ※

※ → Press ▶ button. → The CASSETTE indicator lights. → Remove the Control Unit from the set. → ※

※ → The tape recorder becomes playback mode. → Attach the Control Unit to the set again. → The set turns off. → ※

※ → While pressing the CLOCK SET button, keep on pressing the FAST or the SLOW button. → ※

※ → The tape recorder becomes playback mode at 10:00 AM. → The set turns off at 10:59 AM. → Press the FM1 button. → ※

※ → The FM indicator lights. → Press the REC buttons. → The REC indicator lights. → Release the TIMER button. → ※

※ → The tape recorder becomes record mode and records the FM1 signal. → Depress the SLEEP button. → ※

※ → While pressing the TIMER/SLEEP SET button, keep on pressing the FAST or the SLOW button. → ※

※ → The set turns off at 00 indication in the timer display and turns on at 59 indication.

b) Cover the DIMMER window by hand. → The timer display dims.

6. Stand By Operation

a) Press the FM1 button. → Release the STAND BY button. → The FM1 indicator goes off. → ※

※ → Press the FM1 button. → The FM1 indicator does not light. → Depress the STAND BY button. → ※

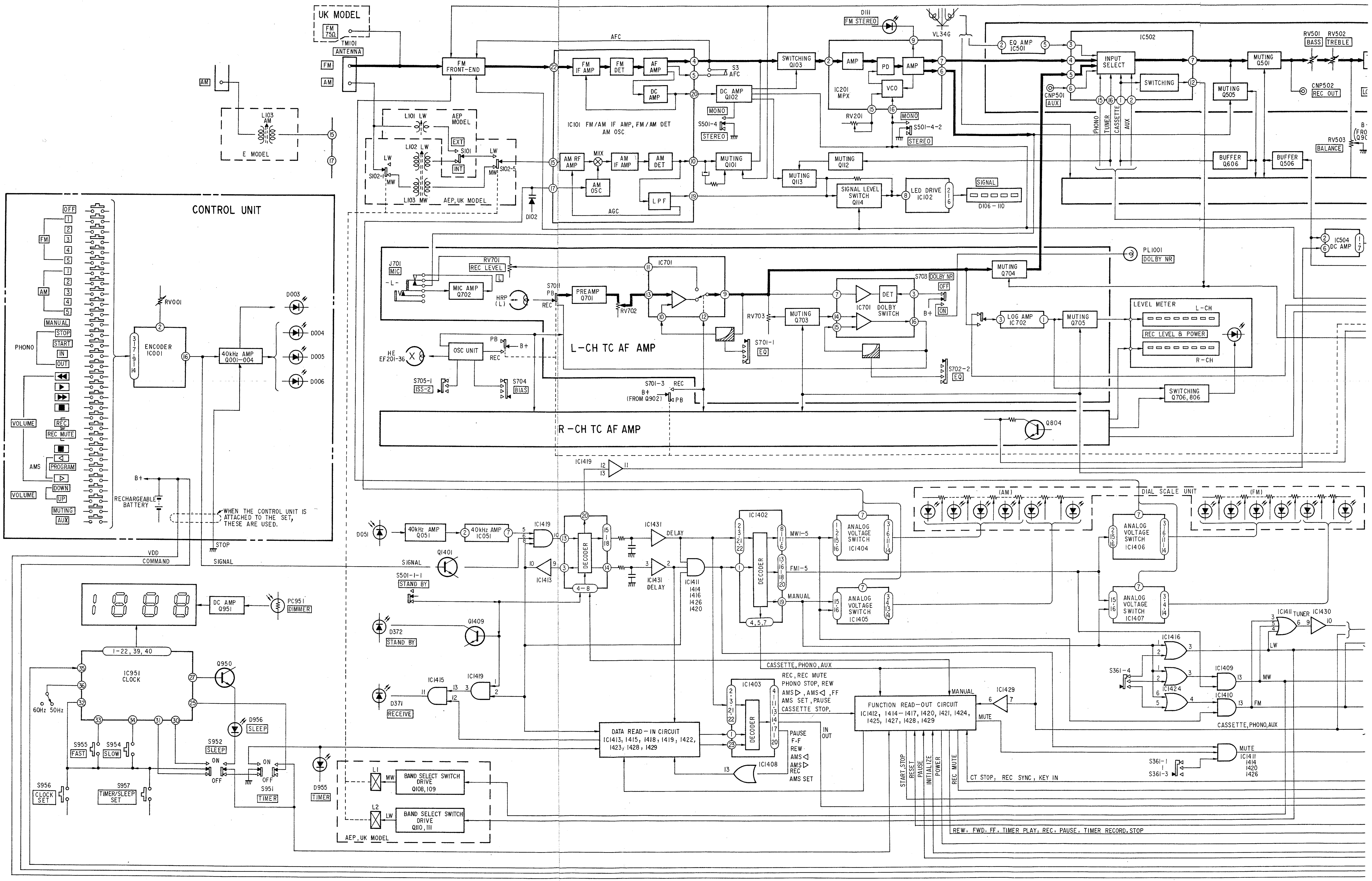
※ → Only the VOLUME indicator lights at the same level as before. → Press the FM1 button. → ※

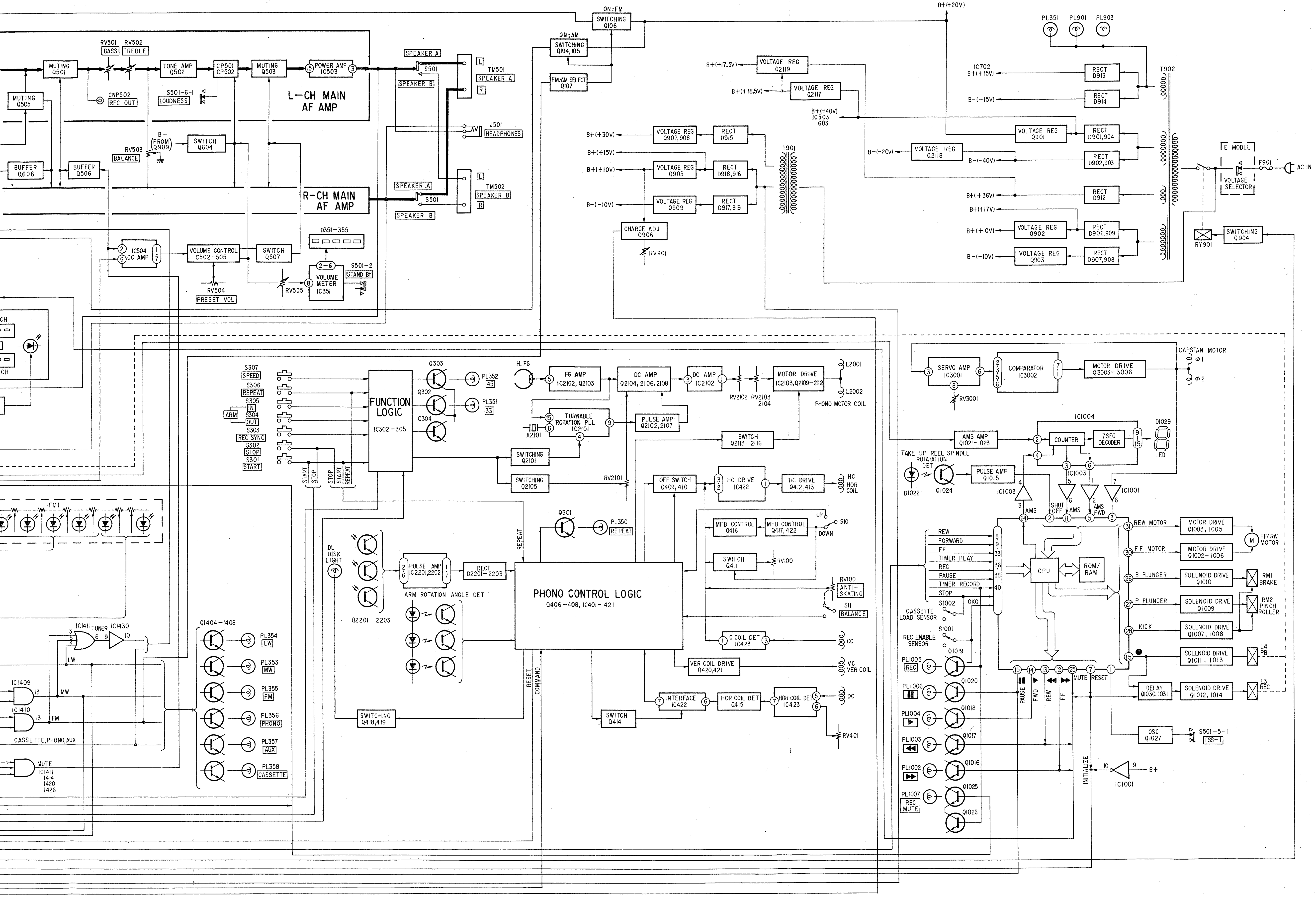
※ → The FM1 indicator lights.

7 Control Unit Operation

a) Hold the Control Unit by hand. → Press the FM1 button. → The set is tuned to FM1 signal and the FM indicator lights.

1-2. BLOCK DIAGRAM

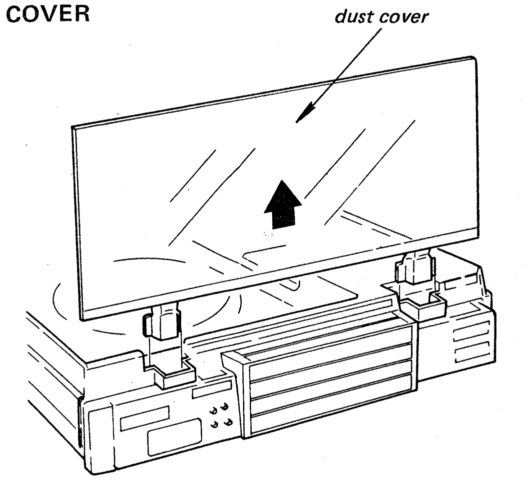

UK MODEL
FM 75Ω
TM101
ANTENNA
FM
AM
L103 AM
E MODEL
L101 LW
AEP MODEL
L102 LW
EXT
S101
INT
S102-1
S102-5
L103 MW
AEP, UK MODEL
D102
FM FRONT-END
AFC
FM IF AMP
FM DET
AF AMP
DC AMP
S3 AFC
DC AMP Q102
MONO
S501-4
STEREO
IC101 FM/AM IF AMP, FM/AM DET AM OSC
AM RF AMP
MIX
AM IF AMP
AM DET
AM OSC
LPF
AGC
MUTING Q101
SWITCHING Q103
D111
FM STEREO
AMP
PD
VCO
IC201 MPX
RV201
S501-4-2
MUTING Q113
MUTING Q112
SIGNAL LEVEL SWITCH Q114
LED DRIVE IC102
SIGNAL
D106 - 110
VL346
EQ AMP IC501
IC502
INPUT SELECT
SWITCHING
CNP501 AUX
PHONO
TUNER
CASSETTE
AUX
MUTING Q505
MUTING Q501
CNP502 REC OUT
RV501 BASS
RV502 TREBLE
RV503 BALANCE
BUFFER Q606
BUFFER Q506
IC504 DC AMP
PL1001 DOLBY NR
CONTROL UNIT
OFF
FM
AM
MANUAL
STOP
START
IN
OUT
PHONO
VOLUME
REC
REC MUTE
AMS
PROGRAM
DOWN
UP
MUTING
AUX
RV001
ENCODER IC001
40kHz AMP Q001-004
D003
D004
D005
D006
B+
RECHARGEABLE BATTERY
WHEN THE CONTROL UNIT IS ATTACHED TO THE SET, THESE ARE USED.
STOP
VDD
COMMAND
SIGNAL
J701 MIC
RV701 REC LEVEL
MIC AMP Q702
HRP (L)
S701 PB REC
PREAMP Q701
RV702
IC701
RV703
MUTING Q703
IC701 DOLBY SWITCH
DET
S703 DOLBY NR
OFF
ON
S701-1 EQ
S702-2 EQ
L-CH TC AF AMP
HE EF201-36
OSC UNIT
PB REC
S705-1 ISS-2
S704 BIAS
S701-3 REC
B+ (FROM Q902)
PB
MUTING Q704
LOG AMP IC702
MUTING Q705
LEVEL METER
L-CH
REC LEVEL & POWER
R-CH
SWITCHING Q706, 806
R-CH TC AF AMP
Q804
IC1419
D051
40kHz AMP Q051
40kHz AMP IC051
Q1401
SIGNAL
S501-1-1 STAND BY
IC1413
DECODER
IC1431 DELAY
IC1411 1414 1416 1426 1420
IC1402
MW1-5
FM1-5
MANUAL
ANALOG VOLTAGE SWITCH IC1404
ANALOG VOLTAGE SWITCH IC1405
(AM)
DIAL SCALE UNIT
(FM)
ANALOG VOLTAGE SWITCH IC1406
ANALOG VOLTAGE SWITCH IC1407
DC AMP Q951
PC951 DIMMER
D372 STAND BY
Q1409
1-22, 39, 40
IC951 CLOCK
Q950
60Hz 50Hz
D371 RECEIVE
IC1415
D956 SLEEP
S955 FAST
S954 SLOW
S952 SLEEP
ON OFF
S951 TIMER
S956 CLOCK SET
S957 TIMER/SLEEP SET
D955 TIMER
L1 MW
BAND SELECT SWITCH DRIVE Q108, 109
L2 LW
BAND SELECT SWITCH DRIVE Q110, 111
AEP, UK MODEL
DATA READ-IN CIRCUIT IC1413, 1415, 1418, 1419, 1422, 1423, 1428, 1429
IC1403
CASSETTE, PHONO, AUX
REC, REC MUTE
PHONO STOP, REW
AMS ▷, AMS ◁, FF
AMS SET, PAUSE
CASSETTE STOP.
PAUSE
F-F
REW
AMS ◁
AMS ▷
REC
AMS SET
IN
OUT
IC1408
FUNCTION READ-OUT CIRCUIT IC1412, 1414-1417, 1420, 1421, 1424, 1425, 1427, 1428, 1429
MANUAL
MUTE
IC1429
START STOP
RESET
PAUSE
INITIALIZE
POWER
REC MUTE
CT STOP, REC SYNC, KEY IN
REW, FWD, FF, TIMER PLAY, REC, PAUSE, TIMER RECORD, STOP
IC1416
S361-4
IC1424
IC1409
IC1410
MW
FM
CASSETTE, PHONO, AUX
IC1411 TUNER IC1430
LW
MUTE IC1411 1414 1420 1426
S361-1
S361-3


ON:FM
SWITCHING Q106
ON:AM
SWITCHING Q104,105
FM/AM SELECT Q107
RV501 BASS
RV502 TREBLE
MUTING Q501
TONE AMP Q502
CP501 CP502
MUTING Q503
POWER AMP IC503
SPEAKER A
S501
SPEAKER B
TM501 SPEAKER A
L
R
MUTING Q505
CNP502 REC OUT
S501-6-1 LOUDNESS
L-CH MAIN AF AMP
J501 HEADPHONES
RV503 BALANCE
B- (FROM Q909)
SWITCH Q604
BUFFER Q606
BUFFER Q506
R-CH MAIN AF AMP
TM502 SPEAKER B
IC504 DC AMP
VOLUME CONTROL D502-505
SWITCH Q507
D351-355
VOLUME METER IC351
S501-2 STAND BY
RV504 PRESET VOL
RV505
B+(+20V)
B+(+17.5V)
VOLTAGE REG Q2119
B+(+18.5V)
VOLTAGE REG Q2117
B+(+40V) IC503 603
B-(-20V)
VOLTAGE REG Q2118
B+(+30V)
VOLTAGE REG Q907,908
RECT D915
B+(+15V)
B+(+10V)
VOLTAGE REG Q905
RECT D918,916
T901
B-(-10V)
VOLTAGE REG Q909
RECT D917,919
CHARGE ADJ Q906
RV901
PL351 PL901 PL903
IC702 B+(+15V)
RECT D913
B-(-15V)
RECT D914
T902
VOLTAGE REG Q901
RECT D901,904
B-(-40V)
RECT D902,903
E MODEL
F901
AC IN
VOLTAGE SELECTOR
B+(+36V)
RECT D912
B+(+17V)
B+(+10V)
VOLTAGE REG Q902
RECT D906,909
B-(-10V)
VOLTAGE REG Q903
RECT D907,908
RY901
SWITCHING Q904
S307 SPEED
S306 REPEAT
S305 IN
ARM
S304 OUT
S303 REC SYNC
S302 STOP
S301 START
FUNCTION LOGIC IC302-305
Q303
Q302
Q304
PL352 45
PL351 33
START STOP
STOP START REPEAT
H.FG
FG AMP IC2102, Q2103
DC AMP Q2104, 2106, 2108
DC AMP IC2102
RV2102 RV2103 2104
MOTOR DRIVE IC2103, Q2109-2112
L2001
L2002
PHONO MOTOR COIL
TURNABLE ROTATION PLL IC2101
X2101
PULSE AMP Q2102,2107
SWITCH Q2113-2116
SWITCHING Q2101
SWITCHING Q2105
RV2101
OFF SWITCH Q409,410
HC DRIVE IC422
HC DRIVE Q412,413
HC HOR COIL
Q301
PL350 REPEAT
UP
S10
DOWN
MFB CONTROL Q416
MFB CONTROL Q417,422
SWITCH Q411
RV100
RV100 ANTI-SKATING
S11 BALANCE
DL DISK LIGHT
PULSE AMP IC2201,2202
RECT D2201-2203
ARM ROTATION ANGLE DET
Q2201-2203
REPEAT
PHONO CONTROL LOGIC
Q406-408, IC401-421
C COIL DET IC423
CC
VER COIL DRIVE Q420,421
VC VER COIL
RESET COMMAND
INTERFACE IC422
HOR COIL DET Q415
HOR COIL DET IC423
DC
SWITCHING Q418,419
SWITCH Q414
RV401
(FM)
IC1411 TUNER IC1430
LW
IC1409 MW
IC1410 FM
CASSETTE, PHONO, AUX
MUTE IC1411 1414 1420 1426
Q1404-1408
PL354 LW
PL353 MW
PL355 FM
PL356 PHONO
PL357 AUX
PL358 CASSETTE
SERVO AMP IC3001
RV3001
COMPARATOR IC3002
MOTOR DRIVE Q3003-3006
CAPSTAN MOTOR
φ1
φ2
IC1004
AMS AMP Q1021-1023
COUNTER
7SEG DECODER
D1029
LED
TAKE-UP REEL SPINDLE ROTATION DET
PULSE AMP Q1015
D1022
Q1024
IC1003
IC1001
AMS
SHUT OFF
AMS FWD
REW
FORWARD
FF
TIMER PLAY
REC
PAUSE
TIMER RECORD
STOP
CPU
ROM/ RAM
CASSETTE LOAD SENSOR
S1002
OKO
REC ENABLE SENSOR
S1001
REW MOTOR
MOTOR DRIVE Q1003, 1005
FF/RW MOTOR
F F MOTOR
MOTOR DRIVE Q1002-1006
B PLUNGER
SOLENOID DRIVE Q1010
RM1 BRAKE
P PLUNGER
SOLENOID DRIVE Q1009
RM2 PINCH ROLLER
KICK
SOLENOID DRIVE Q1007, 1008
SOLENOID DRIVE Q1011, 1013
L4 PB
MUTE
RESET
PAUSE
FWD
REW
FF
DELAY Q1030,1031
SOLENOID DRIVE Q1012, 1014
L3 REC
PL1005 REC
Q1019
PL1006
Q1020
PL1004
Q1018
PL1003
Q1017
PL1002
Q1016
PL1007 REC MUTE
Q1025
Q1026
OSC Q1027
S501-5-1 TSS-1
INITIALIZE
IC1001
B+

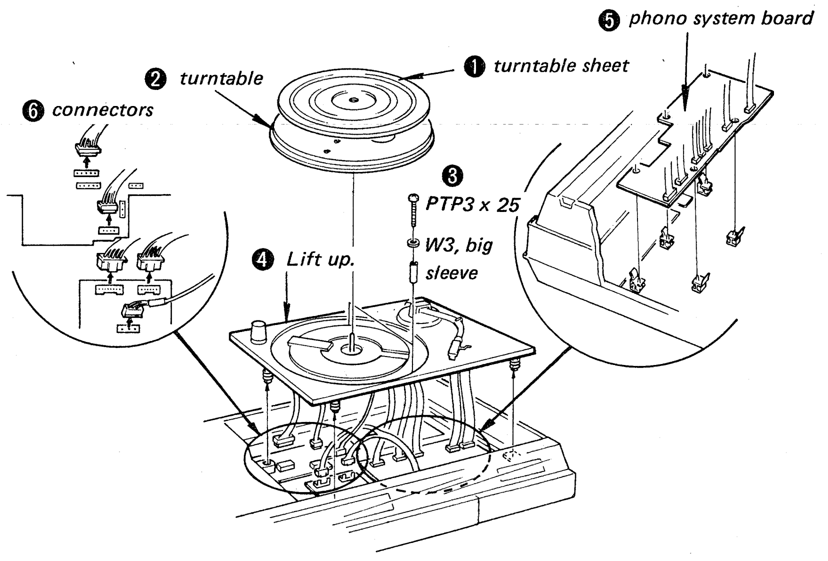
SECTION 2
DISASSEMBLY

Note: Follow the disassembly procedure in the numerical order given.

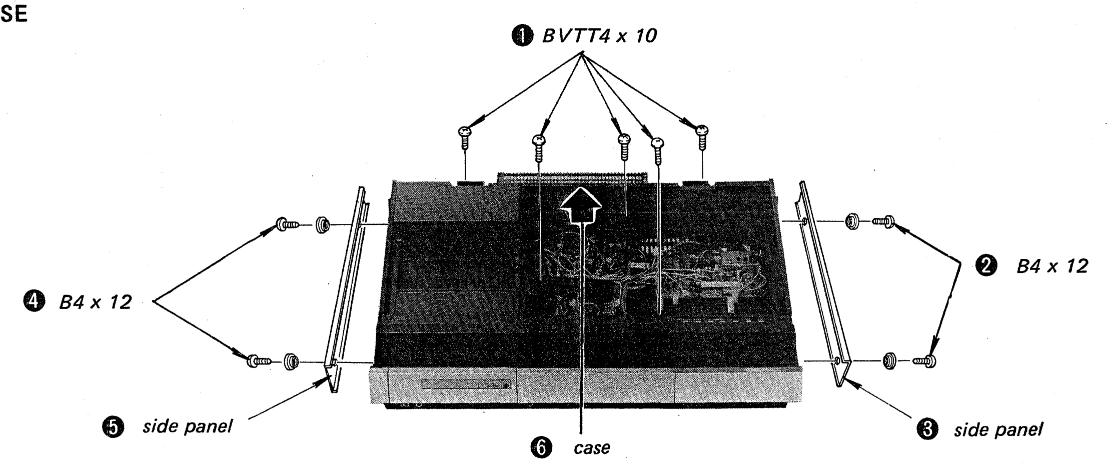
DUST COVER



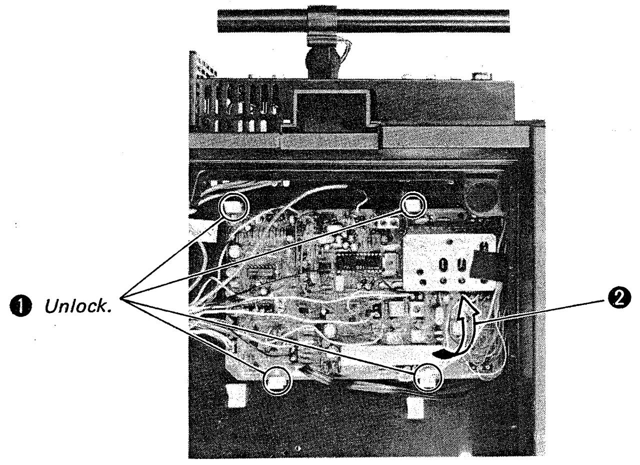
RECORD PLAYER SECTION


❺ phono system board
❷ turntable
❶ turntable sheet
❻ connectors
❸ PTP3 x 25
W3, big sleeve
❹ Lift up.

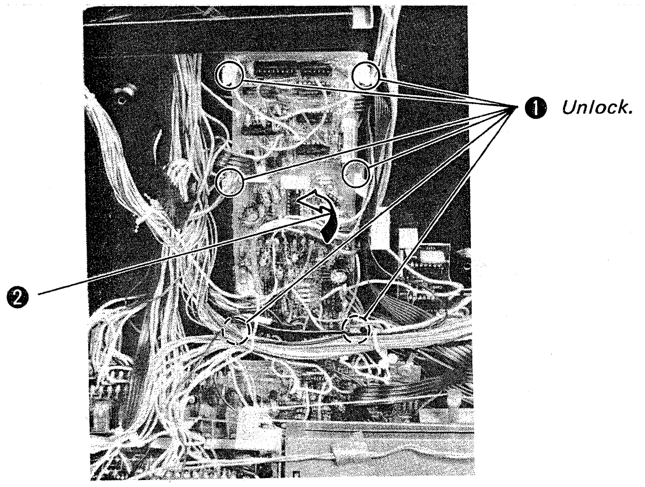
CASE


❶ BVTT4 x 10
❹ B4 x 12
❷ B4 x 12
❺ side panel
❻ case
❸ side panel

TUNER BOARD



EQ FUNCTION BOARD

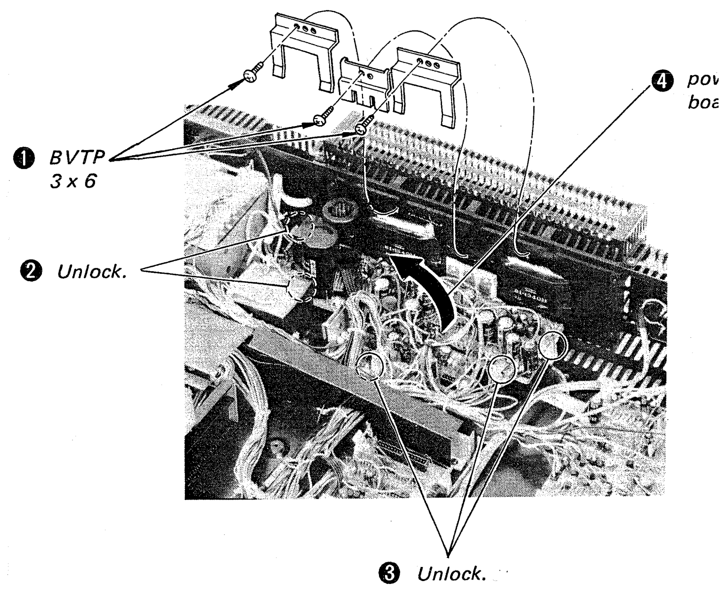


SIGNAL INDICATOR BOARD
LAMP BOARD
INFRARED RAY RECEIVER
RECEIVE INDICATOR BOARD
- See page 16 to 18.

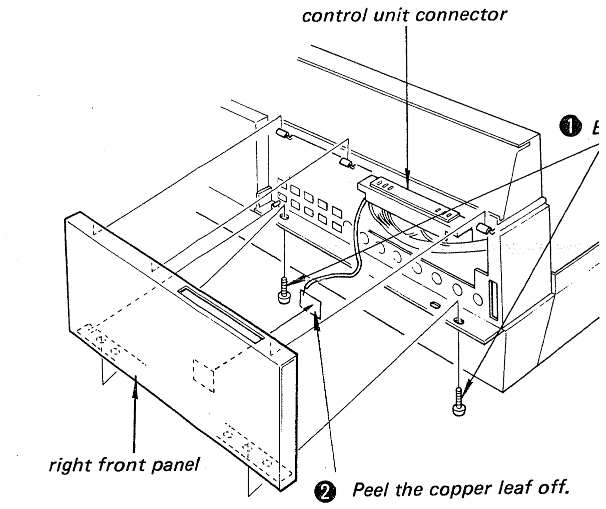
ORNAMENT
- See page 19.

CASSETTE RECORDER SECTION
- See page 21.

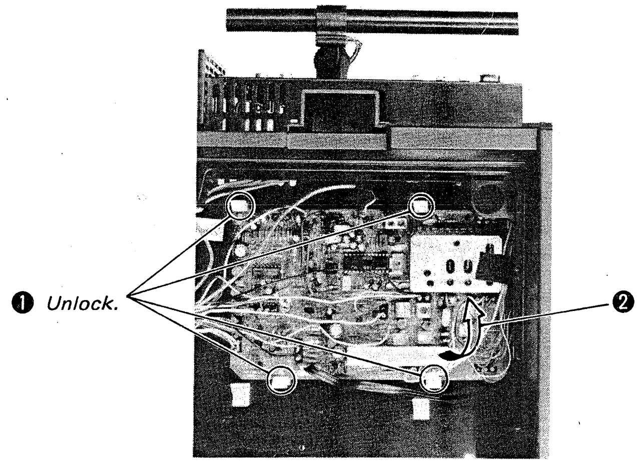
POWER AMP BOARD


❶ BVTP 3 x 6
❷ Unlock.
❹ pov
boa
❸ Unlock.

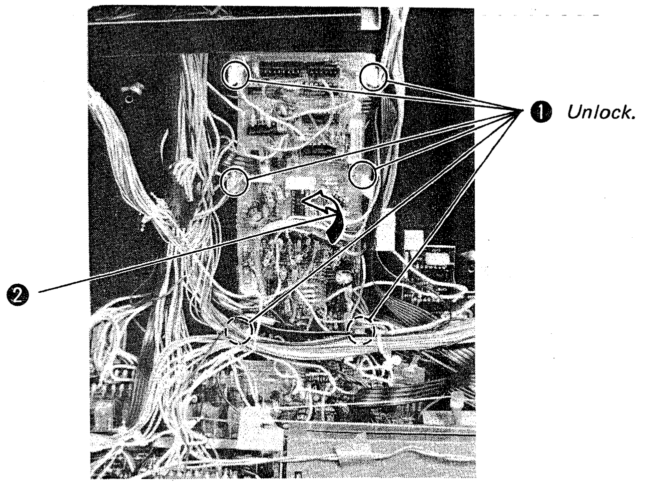
RIGHT FRONT PANEL


control unit connector
❶ E
right front panel
❷ Peel the copper leaf off.

TUNER BOARD



EQ FUNCTION BOARD



SIGNAL INDICATOR BOARD
LAMP BOARD
INFRARED RAY RECEIVER
RECEIVE INDICATOR BOARD

- **See page 16 to 18.**

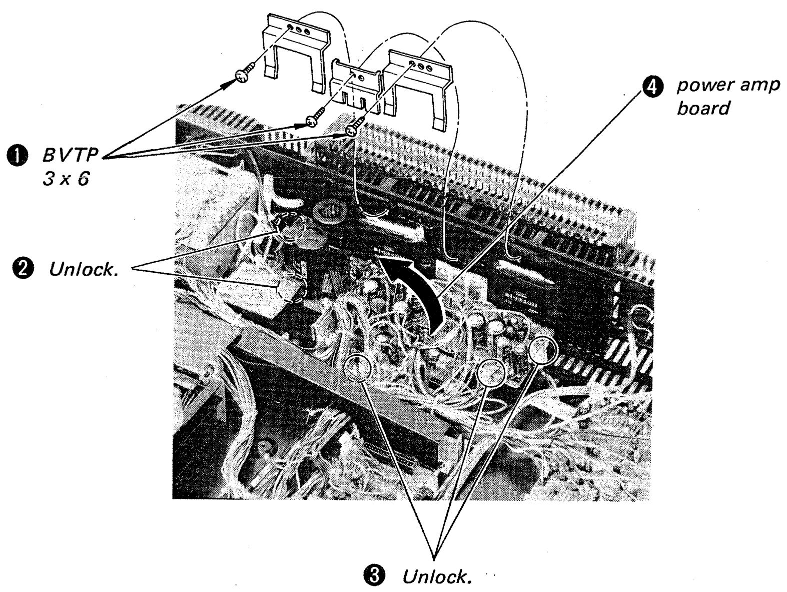
ORNAMENT

- **See page 19.**

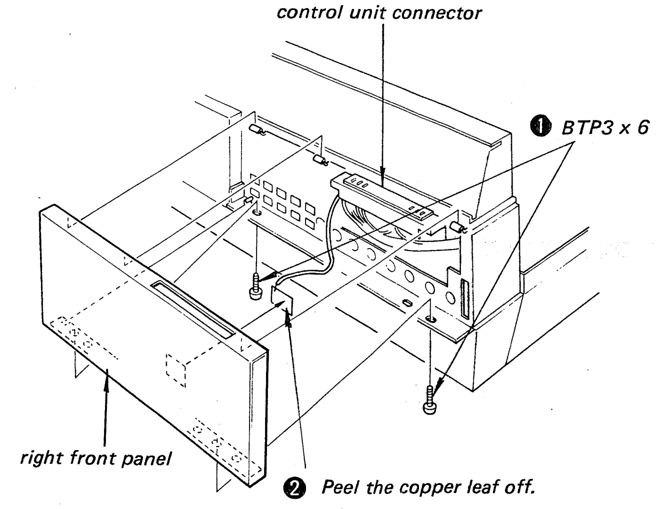
CASSETTE RECORDER SECTION

- **See page 21.**

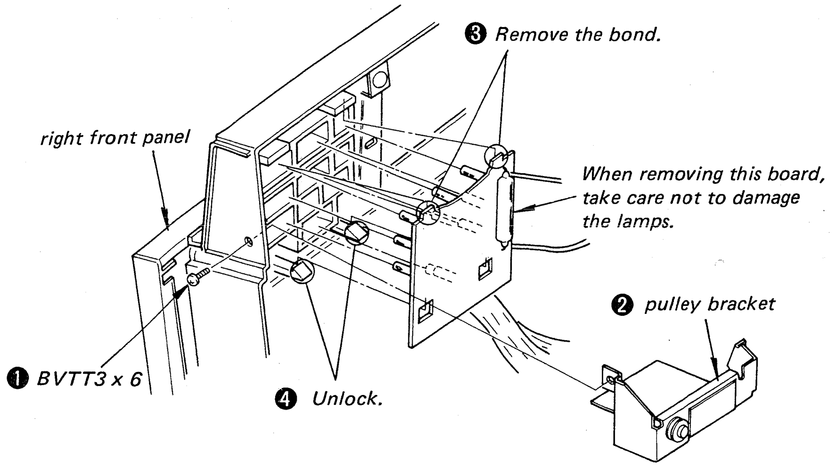
POWER AMP BOARD


❶ BVTP 3 x 6
❷ Unlock.
❹ power amp board
❸ Unlock.

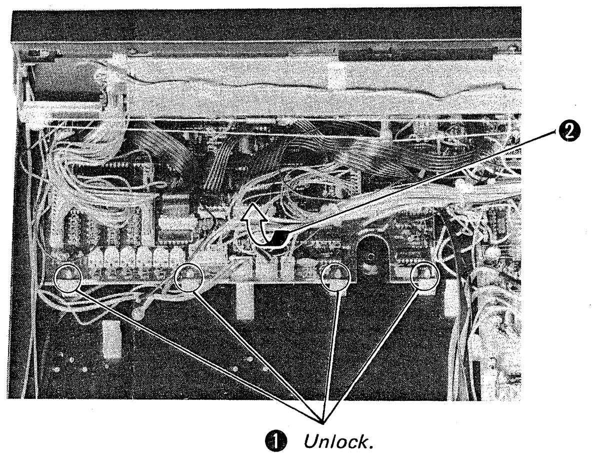
RIGHT FRONT PANEL


control unit connector
❶ BTP3 x 6
right front panel
❷ Peel the copper leaf off.

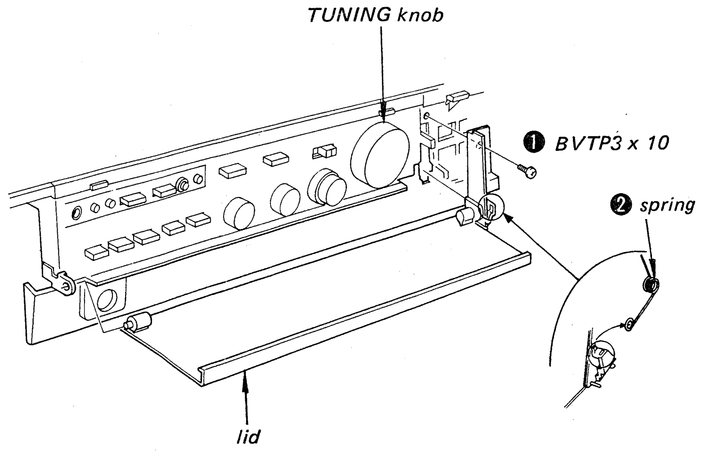
FUNCTION INDICATOR BOARD


❸ Remove the bond.
right front panel
When removing this board, take care not to damage the lamps.
❷ pulley bracket
❶ BVTT3 x 6
❹ Unlock.

REMOTE CONTROL LOGIC BOARD



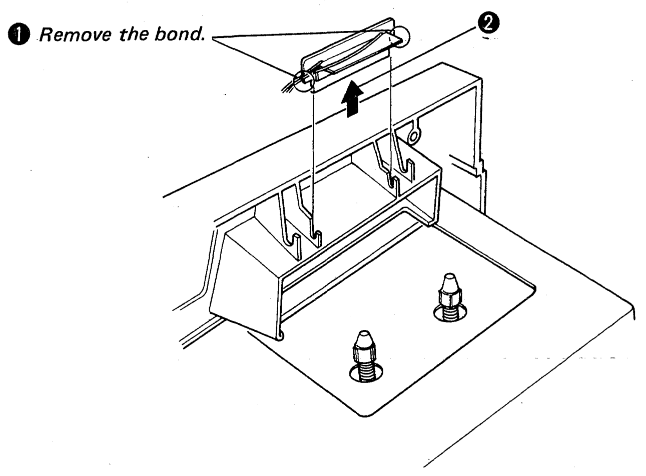
LID


TUNING knob
❶ BVTP3 x 10
❷ spring
lid

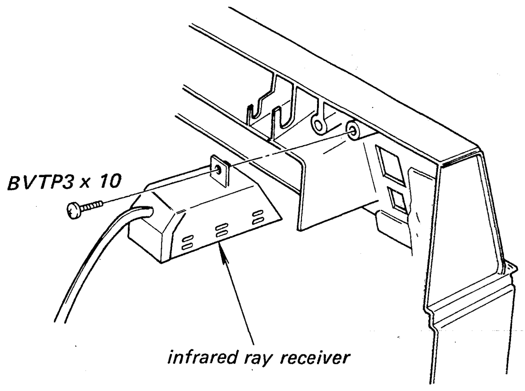
CASE

- See page 13.

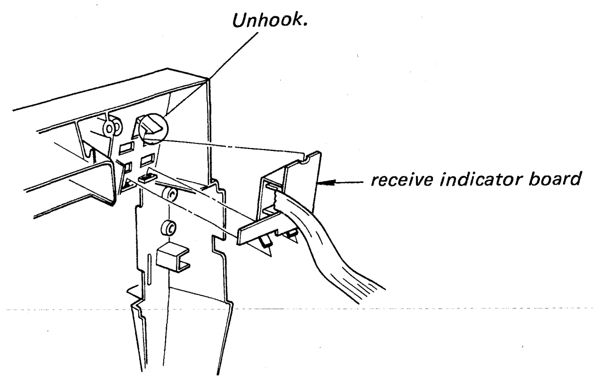
LAMP BOARD


❶ Remove the bond.
❷

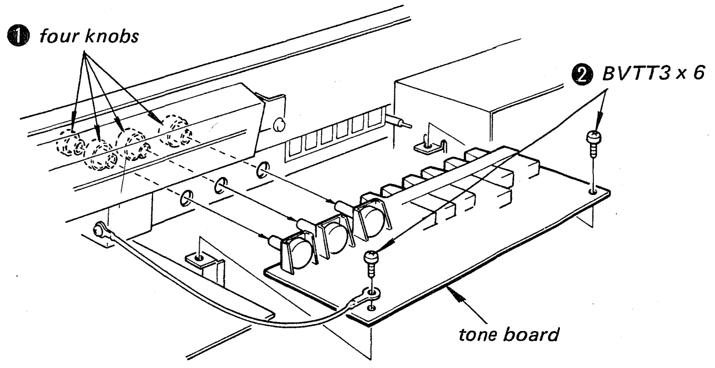
INFRARED RAY RECEIVER


BVTP3 x 10
infrared ray receiver

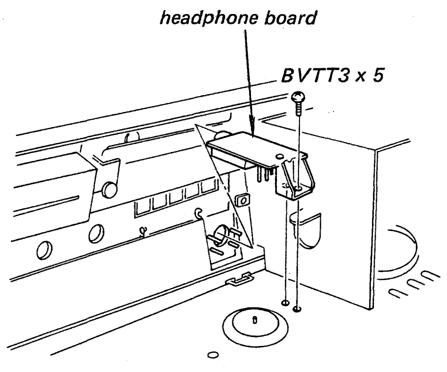
RECEIVE INDICATOR BOARD


Unhook.
receive indicator board

TONE BOARD


❶ four knobs
❷ BVTT3 x 6
tone board

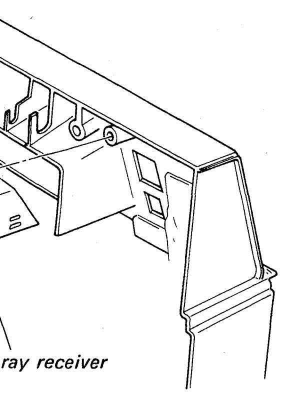
HEADPHONE BOARD


headphone board
BVTT3 x 5

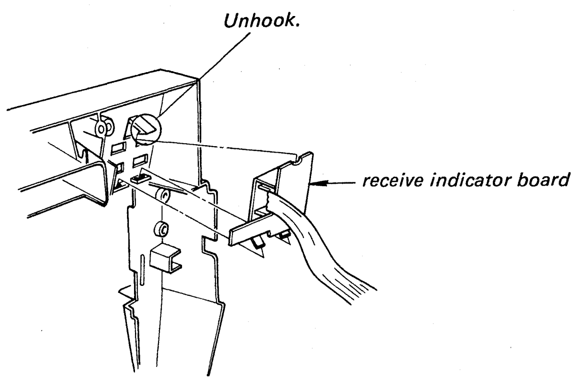
SIGNAL

TIMER (

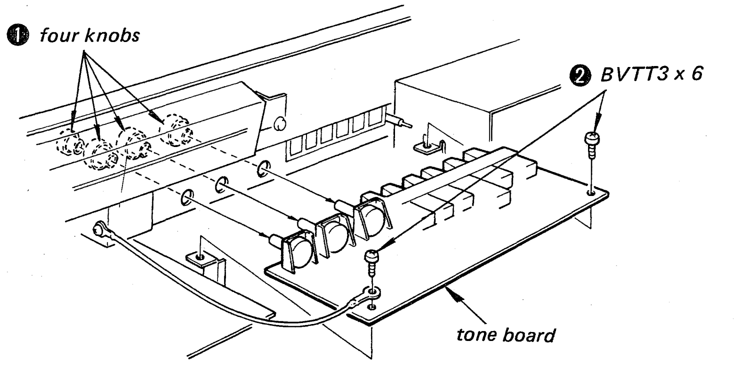
TIMER (


ray receiver

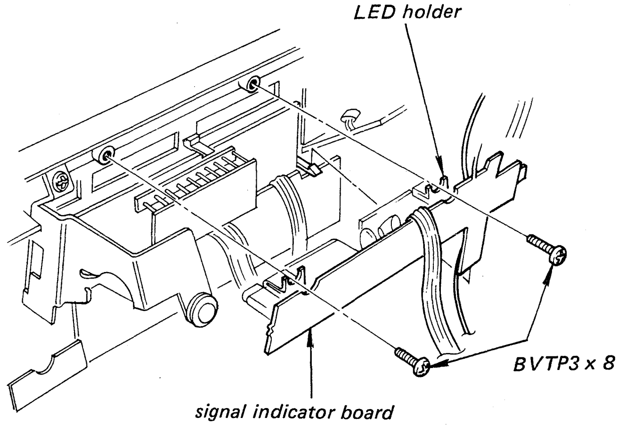
RECEIVE INDICATOR BOARD


Unhook.
receive indicator board

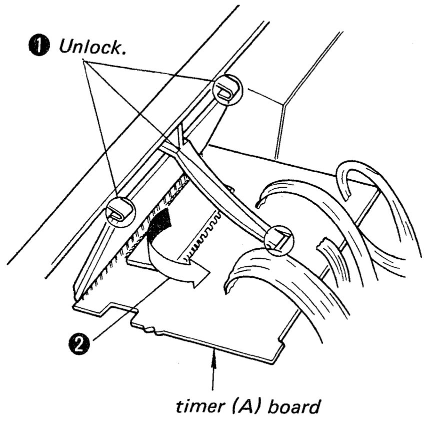
TONE BOARD


❶ four knobs
❷ BVTT3 x 6
tone board

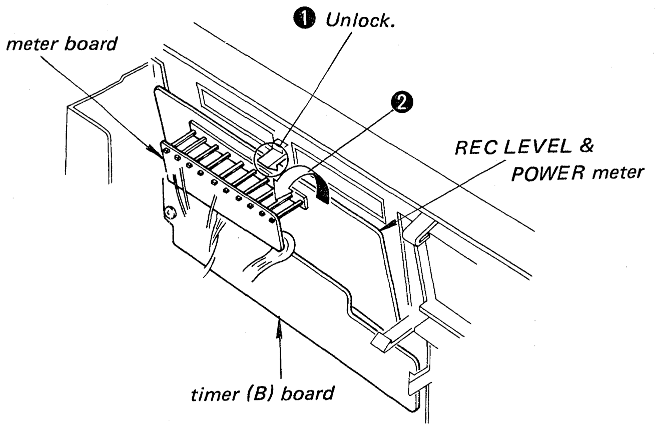
SIGNAL INDICATOR BOARD


LED holder
BVTP3 x 8
signal indicator board

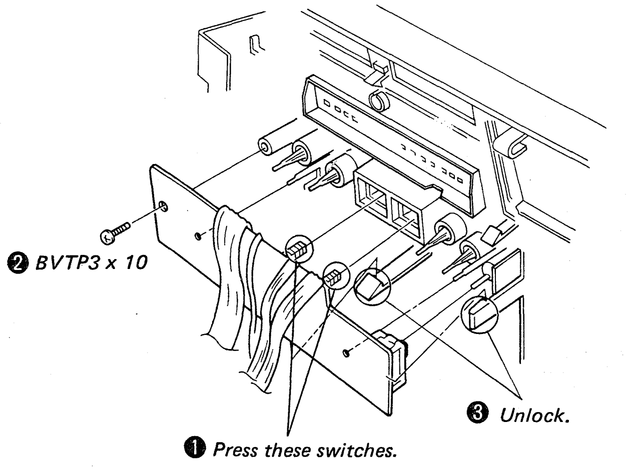
TIMER (A) BOARD


❶ Unlock.
❷
timer (A) board

METER BOARD

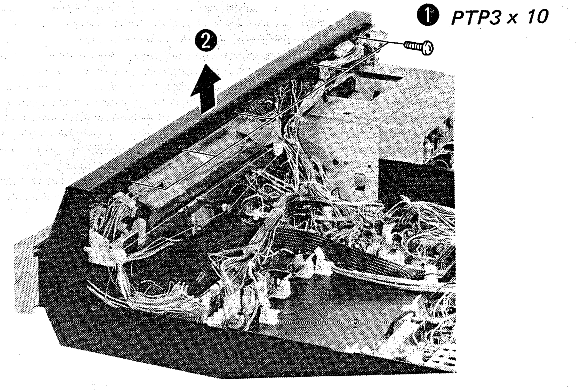

meter board
❶ Unlock.
❷
REC LEVEL &
POWER meter
timer (B) board

TIMER (B) BOARD

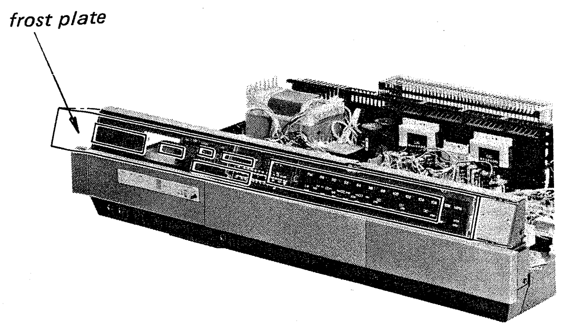

❷ BVTP3 x 10
❸ Unlock.
❶ Press these switches.

CASE
See page 13.

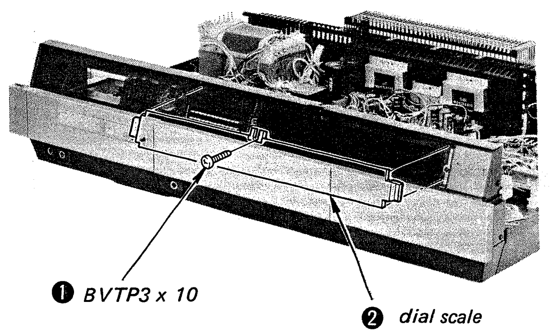
ORNAMENT



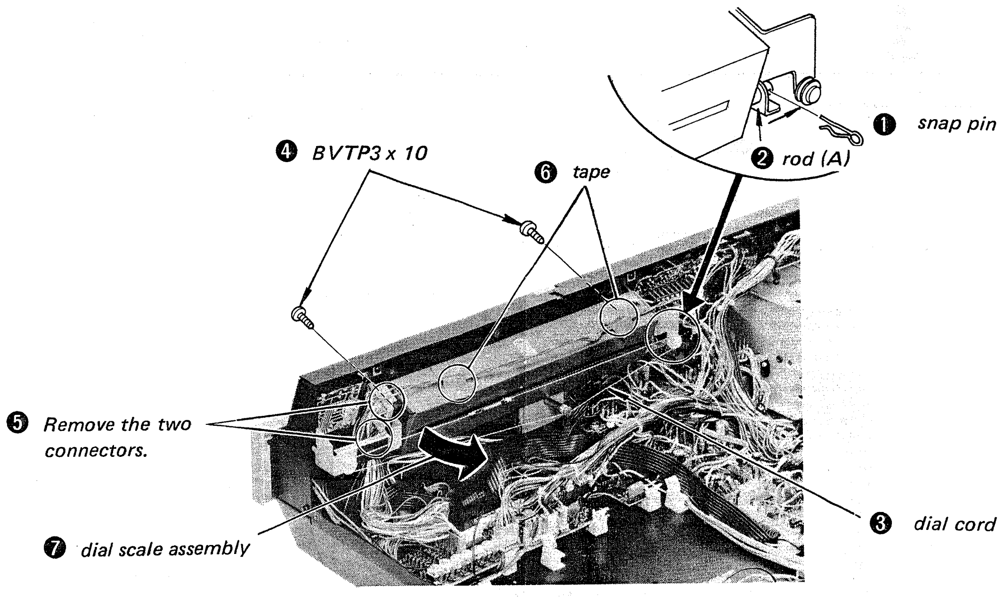
FROST PLATE


frost plate

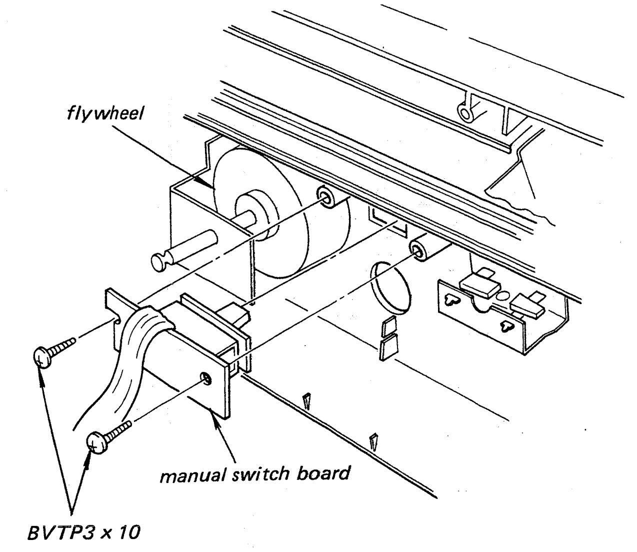
DIAL SCALE


❶ BVTP3 x 10
❷ dial scale

DIAL SCALE ASSEMBLY


❶ snap pin
❷ rod (A)
❸ dial cord
❹ BVTP3 x 10
❺ Remove the two connectors.
❻ tape
❼ dial scale assembly

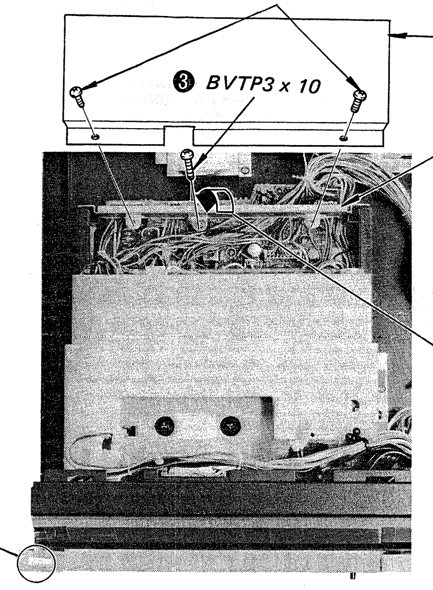
MANUAL SWITCH BOARD


flywheel
manual switch board
BVTP3 x 10

CASE

See page 13.

CASSETTE RECORDER SECTION


❶ BVTT3 x 5

❷ cover plate

❸ BVTP3 x 10

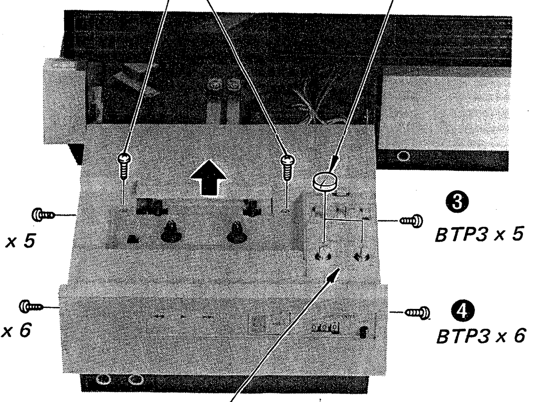
cover plate bracket

❹ Remove the cover plate bracket.

❺ Press the EJECT button.

❻ Pull out the cassette recorder section.

UPPER CASSETTE CASE


❺ BTP2.6 x 8

❻ REC LEVEL knob

❶ BTP3 x 5

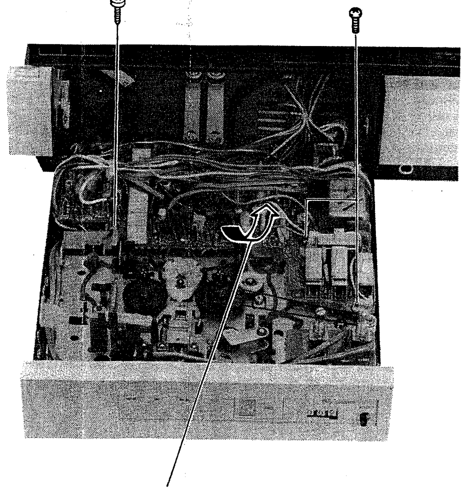
❷ BTP3 x 6

❸ BTP3 x 5

❹ BTP3 x 6

❽ upper cassette case

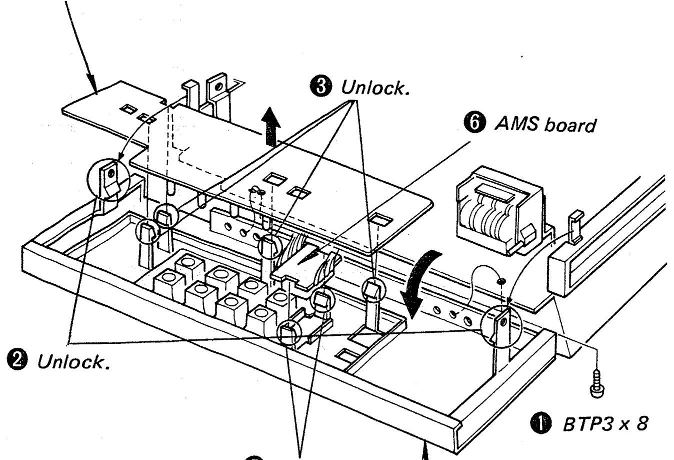
CASSETTE BOARD


❷ BTP3 x 5

❶ B3 x 5

❸ Turn the cassette board.

FRONT PANEL


❹ function display board

❸ Unlock.

❻ AMS board

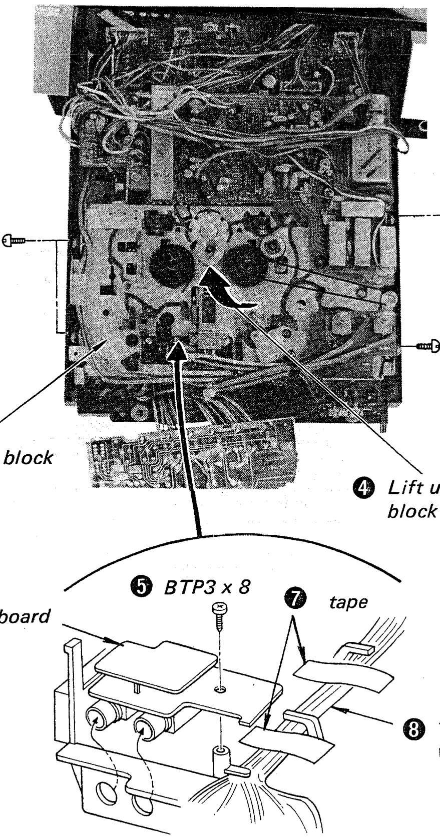
❷ Unlock.

❶ BTP3 x 8

❺ Unlock.

front panel

MECHANISM BLOCK


❶ BTP3 x 6

❷ BTP 3 x 6

❸ B3 x 4

❾ mechanism block

❹ Lift up the mechanism block a little.

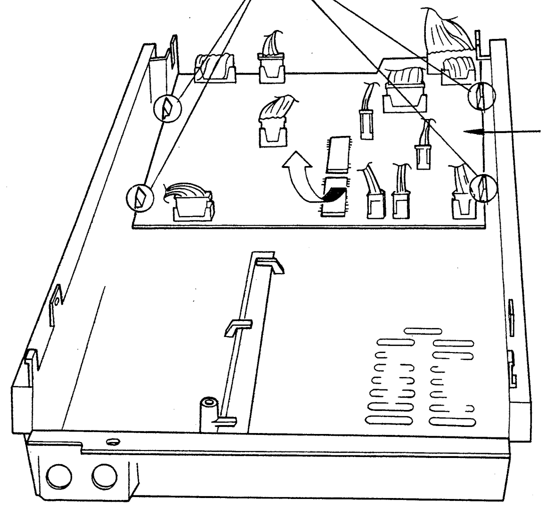
❺ BTP3 x 8

❻ mic board

❼ tape

❽ Take out the lead wires.

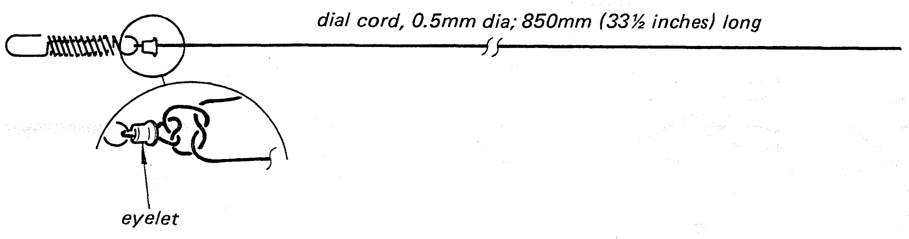
TAPE CASSETTE SYSTEM CONTROL BOARD


❶ Unlock.

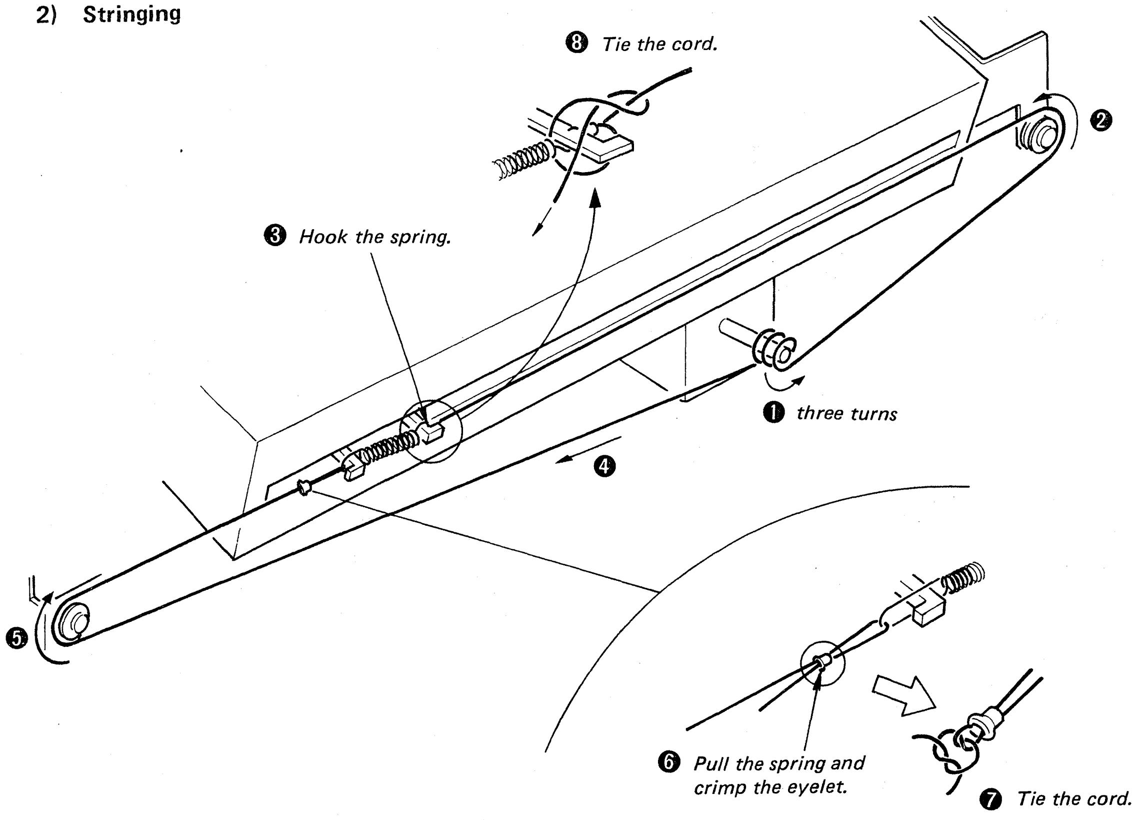
❷ tape cassette system control board

Dial Cord Stringing

1) Preparation

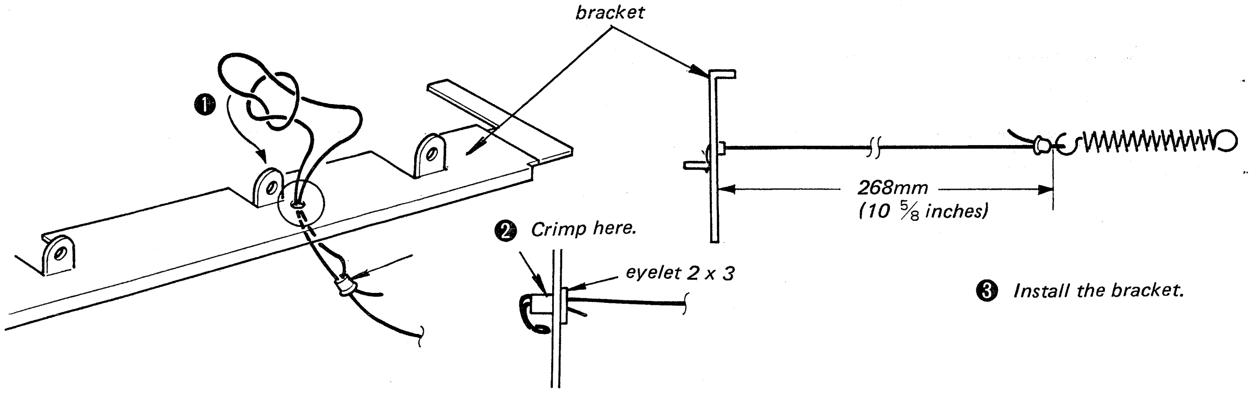

dial cord, 0.5mm dia; 850mm (33½ inches) long
eyelet

2) Stringing

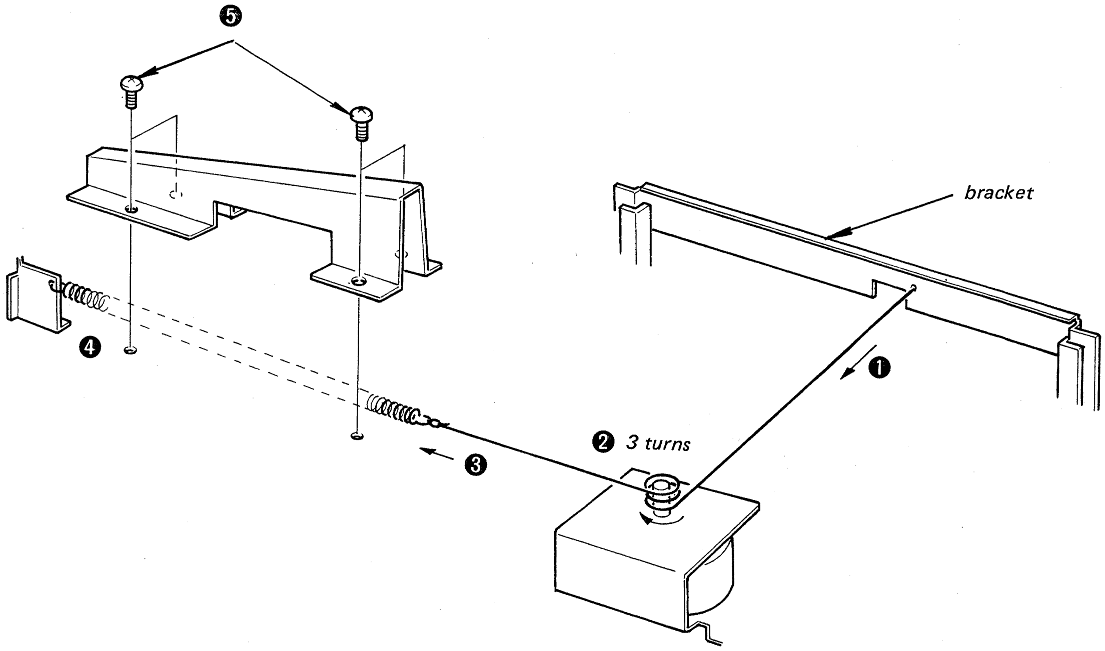

❽ Tie the cord.
❸ Hook the spring.
❷
❶ three turns
❹
❺
❻ Pull the spring and crimp the eyelet.
❼ Tie the cord.

Loading Cord Stringing

1) Preparation


bracket
❶
❷ Crimp here.
eyelet 2 x 3
268mm
(10 ⅝ inches)
❸ Install the bracket.

2) Stringing


❺
bracket
❹
❶
❷ 3 turns
❸

SECTION 3
ADJUSTMENTS

3-1. MECHANICAL ADJUSTMENTS

• RECORD PLAYER SECTION

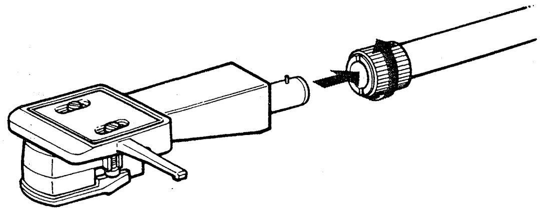
TONEARM ADJUSTMENT

The following procedures should be performed on a level surface. Be careful not to damage the stylus tip while making adjustment.

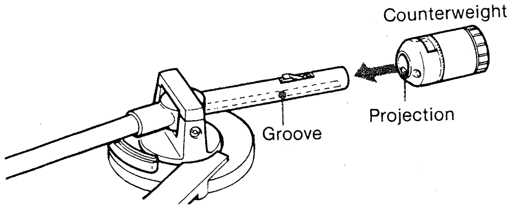
Preparation

❶ Secure the tonearm to the armrest.

❷ Plug the supplied headshell into the tonearm and turn the locking collar counterclockwise until the headshell is firmly locked.



❸ Insert the counterweight by matching the projection to the groove as illustrated.

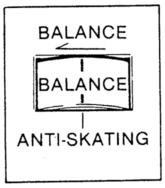


❹ Remove the stylus guard.

Longitudinal balance adjustment *1

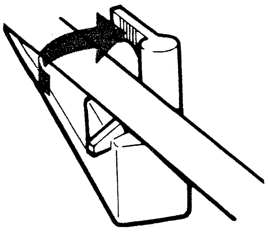
Before making this adjustment, connect the power cord and check that the STAND BY switch is depressed.

❶ Set the ANTI-SKATING gauge to the BALANCE position.

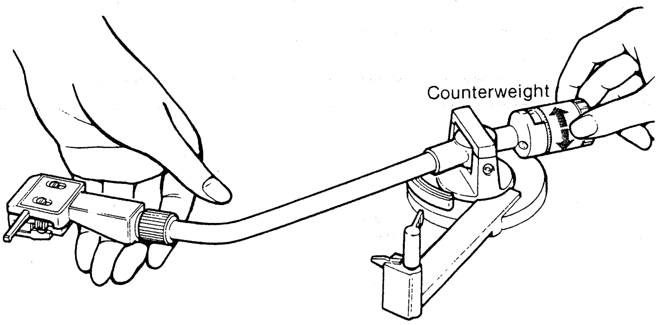


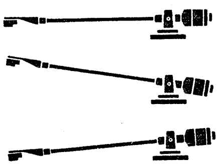
❷ Press the PHONO-START button of the control unit. The tonearm platform will lower to permit easy adjustment.

❸ Release the tonearm from the arm rest.



❹ Turn the counterweight as required until the tonearm is in a horizontally balanced position.





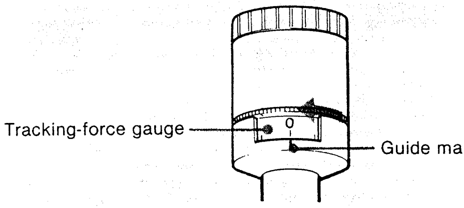
Correct balance

Move the weight forward.

Move the weight backward.

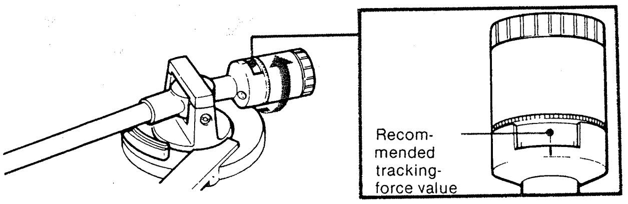
❺ Secure the tonearm to the arm rest.

❻ While holding the counterweight at the balanced position, separately turn the tracking-force gauge until the "0" indication is aligned with the red guide mark.



Tracking-force adjustment *2

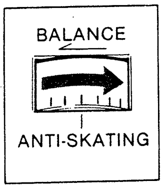
Turn the counterweight in the direction indicated by the arrow so that the recommended tracking-force value for the supplied cartridge (2 g) is aligned with the red guide mark.



Anti-skating compensation *3

Turn the ANTI-SKATING gauge so that the tracking-force value used (2 g) is aligned with the guide mark.

● If the BALANCE position is aligned with the guide mark, play will not begin with the START button.



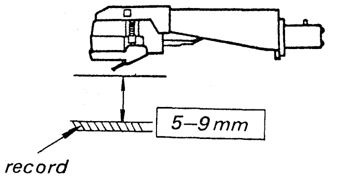
***1 Longitudinal balance adjustment**
While playing the record, the weight of the tonearm is supported by the arm pivot and only tracking force is applied to the stylus tip. To accomplish this, the tonearm must first be balanced horizontally, with the tracking force indicator set at "0"

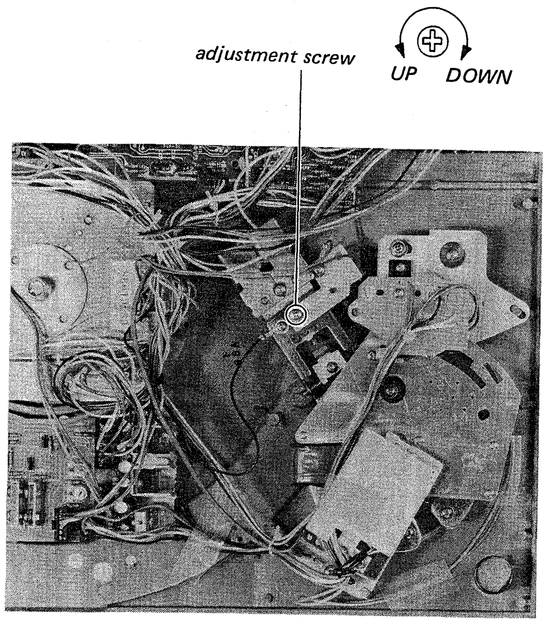
***2 Tracking force**
After the longitudinal balance adjustment, apply the recommended tracking force weight so that the stylus tip will trace the music groove accurately.

***3 Anti-skating compensation**
While the record is being played, the frictional force between the record groove and the stylus produces a force that tends to drive the tonearm toward the center of the record. The anti-skating compensation cancels the above mentioned force, and is applied in accordance with the tracking force.
Incorrect anti-skating compensation results in sound distortion and uneven wear on both the stylus and the record.

Stylus Height Adjustment

1. Place the tonearm over the record.
2. Confirm that there is 5–9 mm clearance between the stylus tip and the record.
3. If necessary, adjust by turning the adjustment screw.

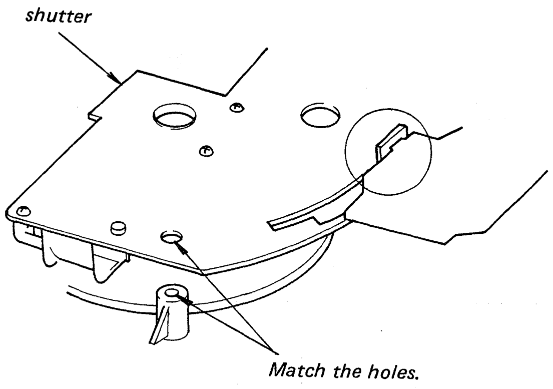

5–9mm
record


adjustment screw
UP
DOWN

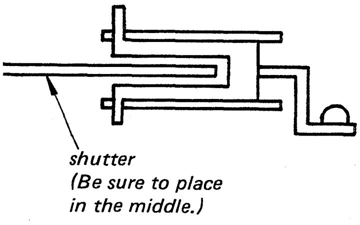
Shutter Position Adjustment

When installing the shutter, install as follows.

1. Fix the tonearm to the tonearm rest.
2. Install the shutter so that the hole of the shutter matches with the screw hole in the frame.


shutter
Match the holes.

Note: Confirm that the shutter plate is placed accurately.


shutter
(Be sure to place in the middle.)

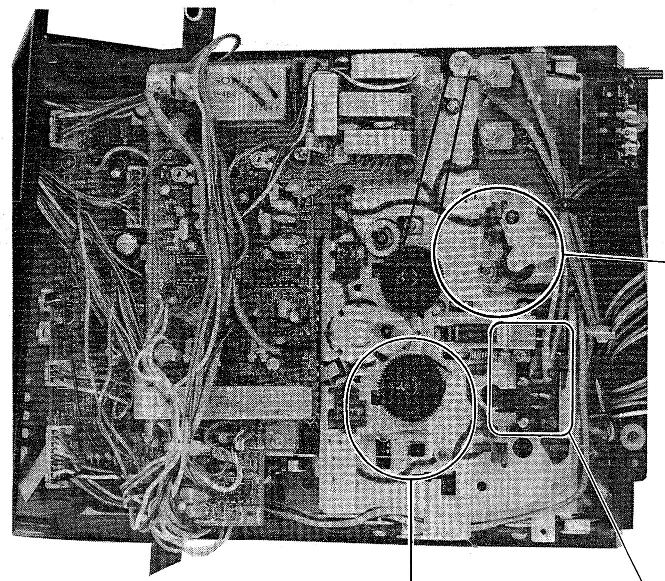
● CASSETTE RECORDER SECTION

PRECAUTION

1. Clean the following parts with a denatured-alcohol-moistened swab:

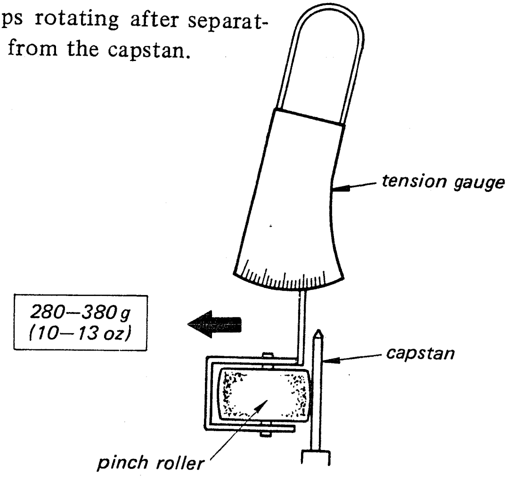
record/playback head	pinch roller
erase head	rubber belts
capstan	idlers

2. Demagnetize the record/playback head with a head demagnetizer.
3. Do not use a magnetized screwdriver for the adjustments.
4. After the adjustments, apply a suitable locking compound to the parts adjusted.
5. The adjustments should be performed with the rated power supply voltage unless otherwise noted.



Pinch Roller Pressure Measurement — Forward Mode —

Slowly pull the pinch roller and read the tension gauge just when the pinch roller stops rotating after separating from the capstan.

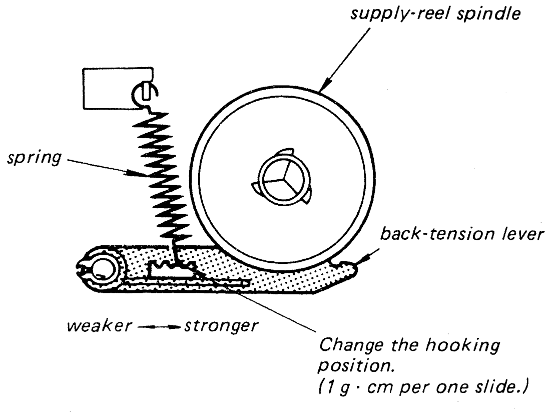

tension gauge
280–380 g
(10–13 oz)
capstan
pinch roller

Torque Measurement and Back Tension Torque Adjustment

1.

Torque	Torque meter	Meter reading
Forward	CQ-102C	30–55 g · cm (0.42–0.76 oz · inch)
Back tension	CQ-102C	2.5–4.5 g · cm (0.04–0.06 oz · inch)

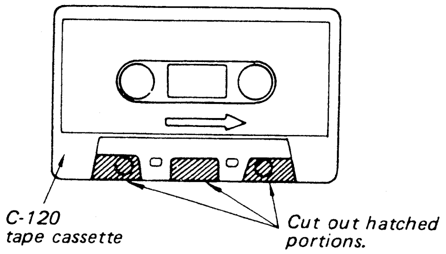
2. If the specified back-tension torque is not obtained, change the hooking position.


supply-reel spindle
spring
back-tension lever
weaker ⟷ stronger

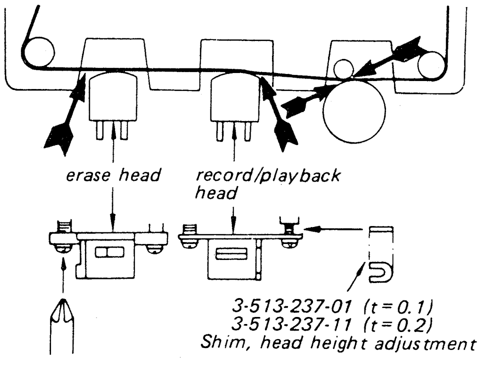
Change the hooking position.
(1 g · cm per one slide.)

Head Height Adjustment

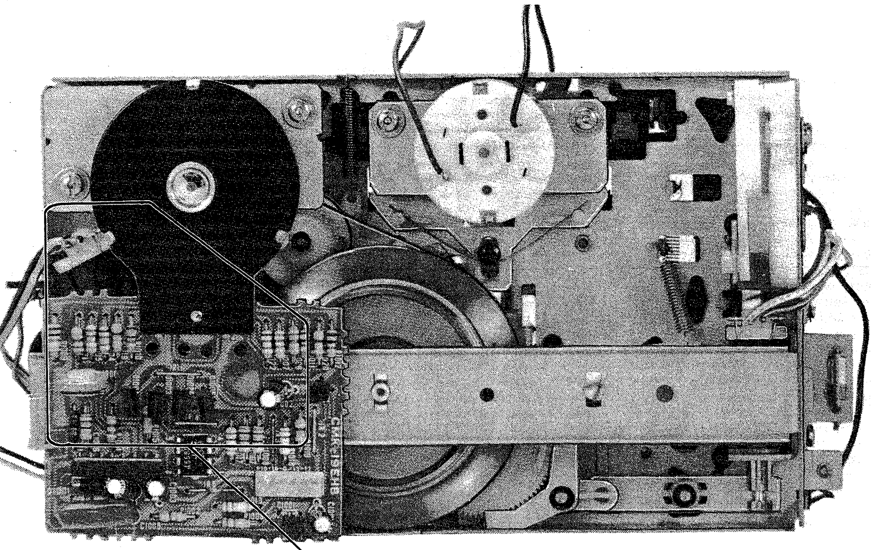
1. Prepare an adjustment cassette as shown below.


C-120
tape cassette
Cut out hatched portions.

2. In record mode and viewing from the front, adjust the head heights to eliminate tape curl and tape twist at portions shown by the arrows.

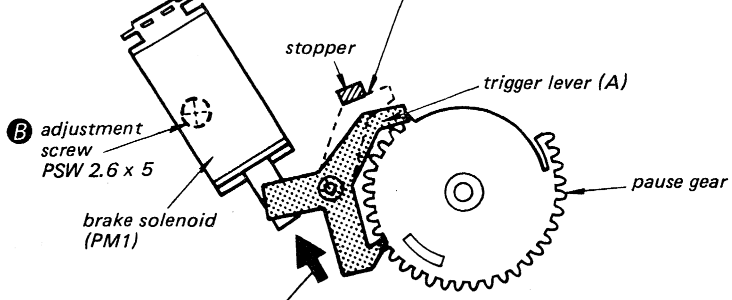

erase head
record/playback head

3-513-237-01 (t = 0.1)
3-513-237-11 (t = 0.2)
Shim, head height adjustment



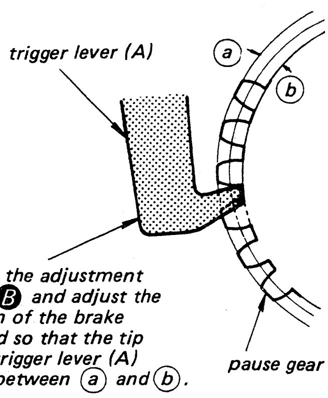
Brake Solenoid (PM1) Position Adjustment

— Stop Mode —

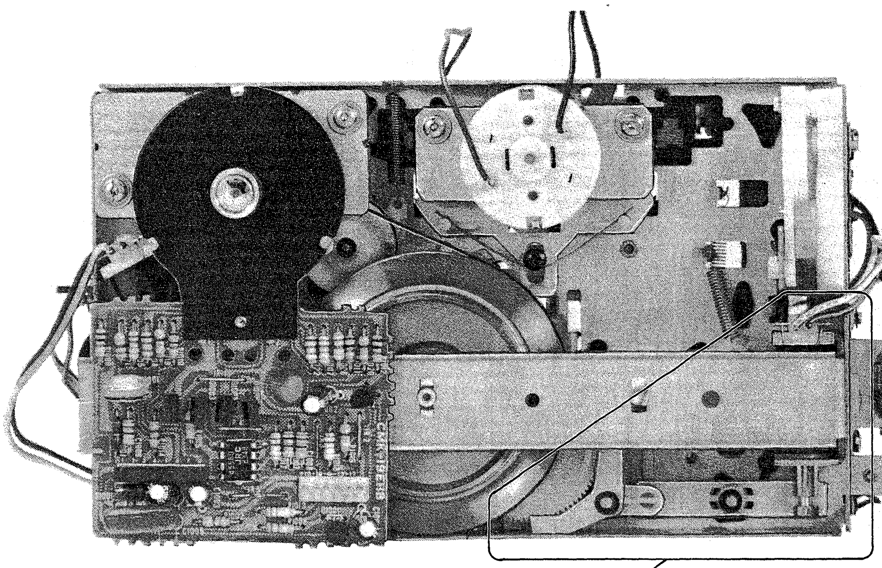

stopper
trigger lever (A)
pause gear
B adjustment screw PSW 2.6 x 5
brake solenoid (PM1)

❸ *Confirm that the trigger lever (A) is touching the stopper after releasing the pole piece.*

❶ *Keep pushing the pole piece in this direction. (Confirm that there is a clicking sound at this time.)*

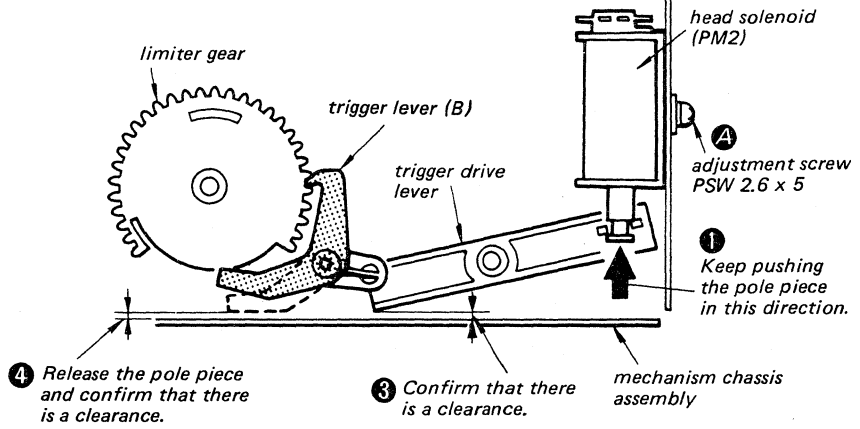

trigger lever (A)
ⓐ
ⓑ
pause gear

❷ *Loosen the adjustment screw B and adjust the position of the brake solenoid so that the tip of the trigger lever (A) comes between ⓐ and ⓑ.*



Head Solenoid (PM2) Position Adjustment

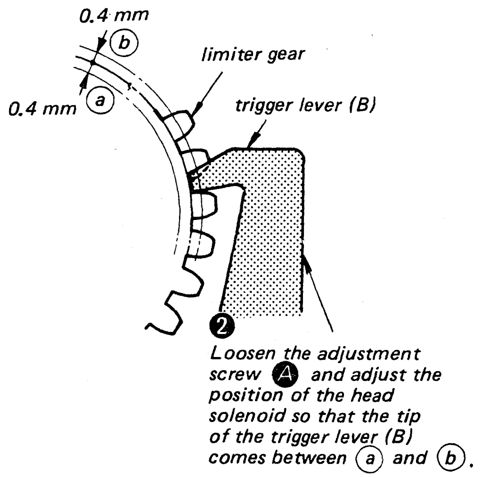
– Stop Mode –


limiter gear
trigger lever (B)
trigger drive lever
head solenoid (PM2)
mechanism chassis assembly
adjustment screw PSW 2.6 x 5

❶ Keep pushing the pole piece in this direction.

❸ Confirm that there is a clearance.

❹ Release the pole piece and confirm that there is a clearance.


0.4 mm
ⓑ
0.4 mm
ⓐ
limiter gear
trigger lever (B)

❷ Loosen the adjustment screw Ⓐ and adjust the position of the head solenoid so that the tip of the trigger lever (B) comes between ⓐ and ⓑ.

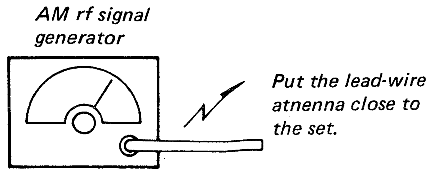
3-2. ELECTRICAL ADJUSTMENTS

• TUNER SECTION

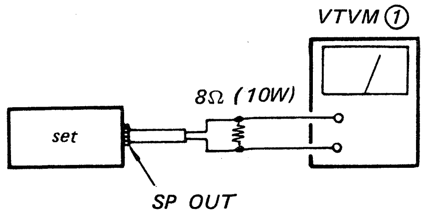
AM SECTION

Setting:

Control Unit: attached on the set (manual operation)
MANUAL TUNER FUNCTION siwtch: MW
MODE switch: MONO


AM rf signal generator
Put the lead-wire atnenna close to the set.

Modulation: 400Hz, 30%


VTVM ①
8Ω (10W)
set
SP OUT

- Repeat the procedures in each adjustment several times, and the frequency coverage and tracking adjustments should be finally done by the trimmer capacitors.

MW FREQUENCY COVERAGE ADJUSTMENT

Tuning Control Voltage Adjustment	Dial Indication	Digital VOM Reading	Adjustment Part
	maximum frequency	25V	RV1402
	minimum frequency	1V	RV1404
	Adjust for a specified reading on digital VOM.		

Local Oscillator Frequency Adjustment	Dial Indication	AM Rf Signal Generator Frequency	Adjustment Part
	minimum frequency	515kHz	L105
	maximum frequency	1660kHz	CT104
	Adjust for a maximum reading on VTVM①.		

Dial Pointer Setting	Dial Indication	AM Rf Signal Generator Frequency	Adjustment Part
	1000kHz	1000kHz	RV1403
	Adjust for a maximum reading on VTVM①.		

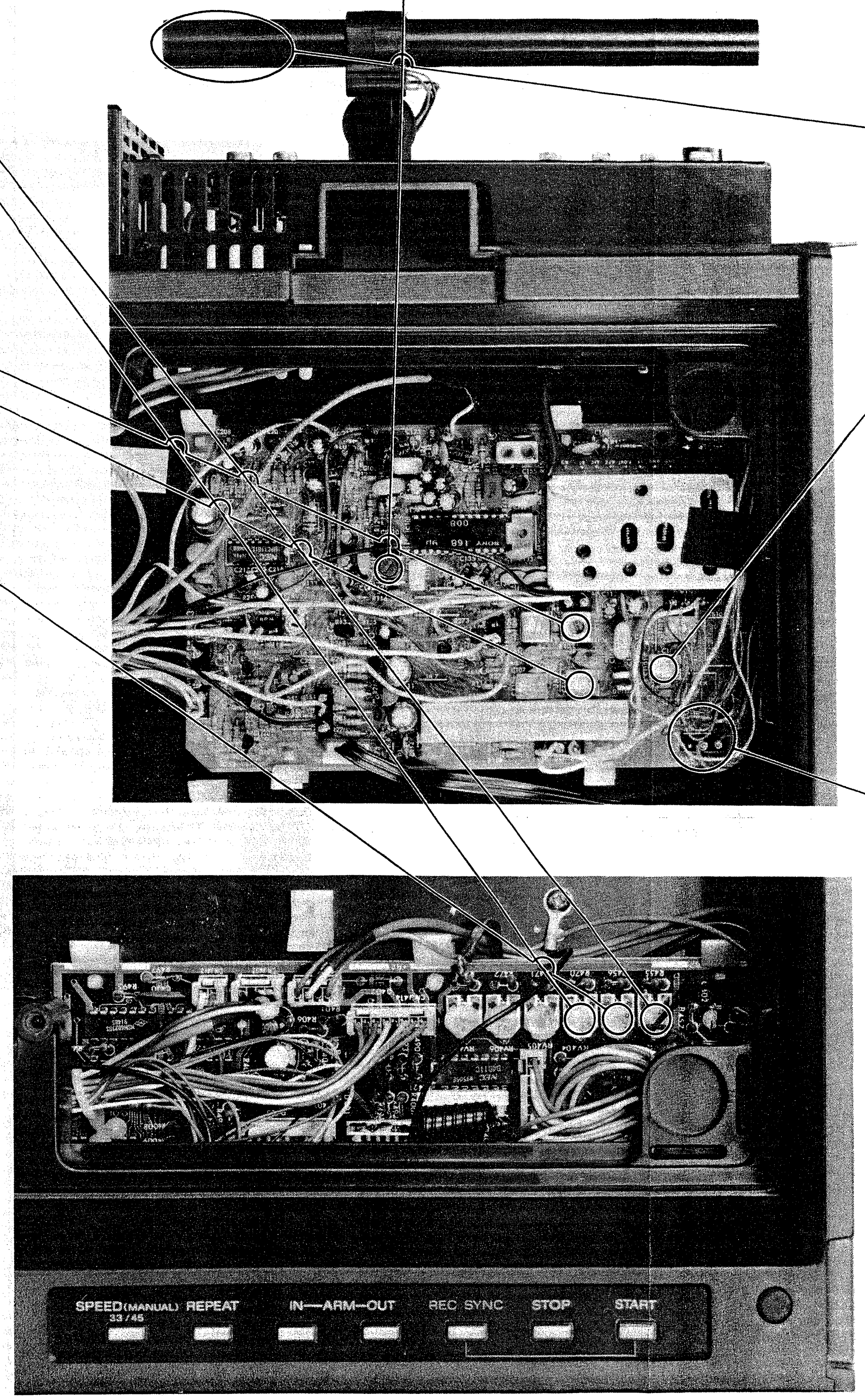
Note:
Be sure to perform the LW frequency coverage adjustment after the tuning control voltage adjustment.

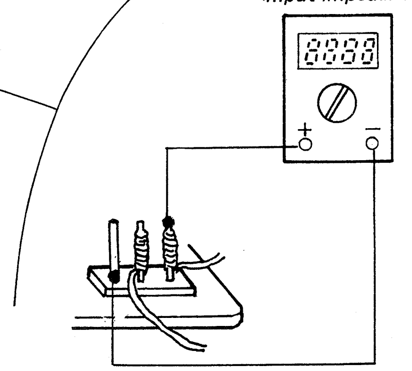
AM IF ALIGNMENT

Adjust for a maximum reading on VTVM①.
450kHz
IFT101

MW TRACKING ADJUSTMENT

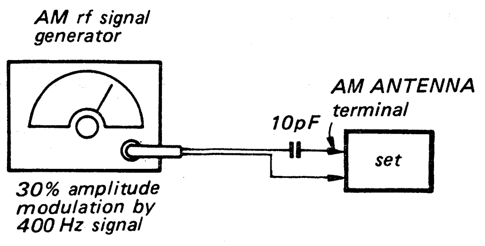
Adjust for a maximum reading on VTVM①.	
L103	600kHz
CT101	1,400kHz

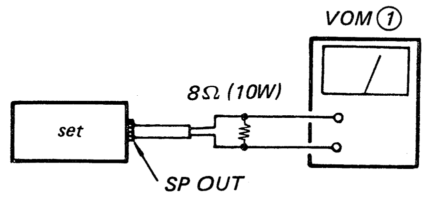

SPEED(MANUAL) 33/45
REPEAT
IN—ARM—OUT
REC SYNC
STOP
START


digital VOM (dc range) (more than 1MΩ input impedance)
8888
+
−

Setting:

Control Unit: attached on the set (manual operation)
MANUAL TUNER FUNCTION switch: LW
MODE switch: MONO
LW antenna selector: EXT ANT (AEP model)

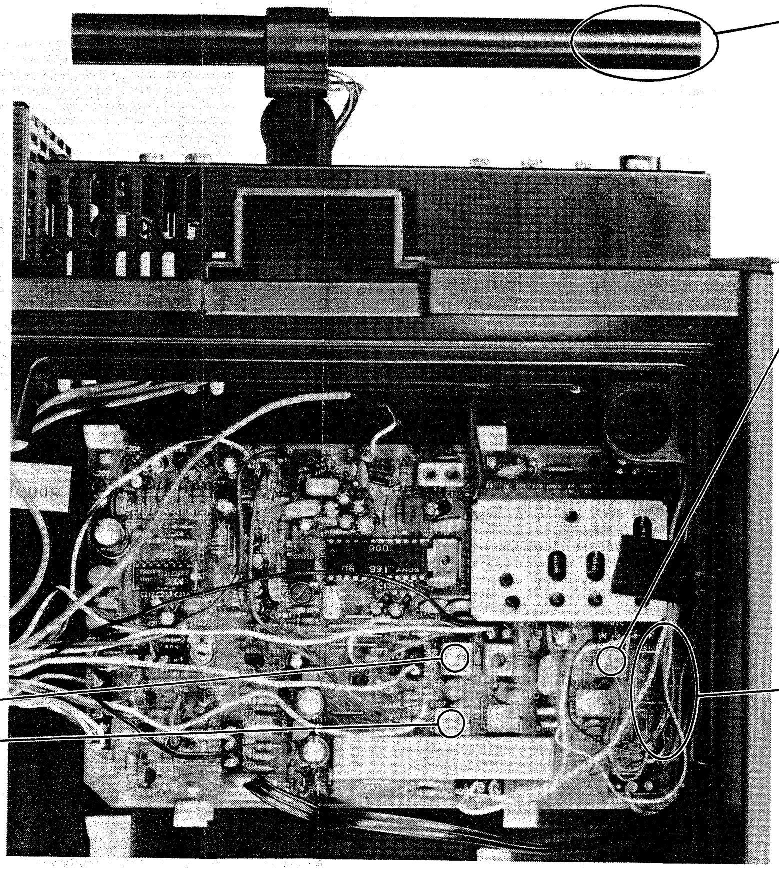

AM rf signal generator
AM ANTENNA terminal
10pF
set
30% amplitude modulation by 400 Hz signal


VOM ①
8Ω (10W)
set
SP OUT

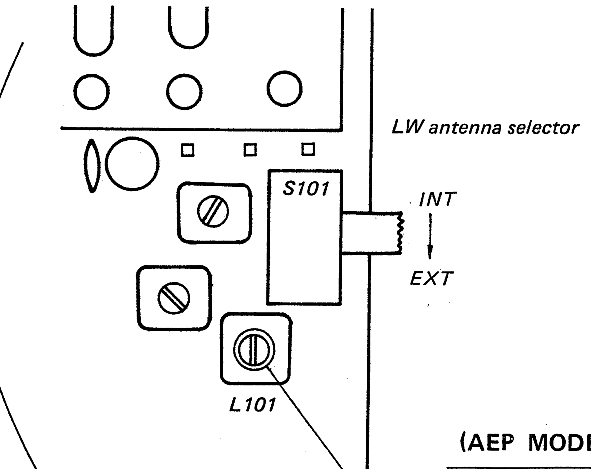
- Repeat the procedures in each adjustment several times, and the frequency coverage and tracking adjustments should be finally done by the trimmer capacitors.

AEP, UK model

DIAL INDICATION	LW FREQUENCY COVERAGE ADJUSTMENT	
	Adjust for a maximum reading on VOM ①.	
150kHz	L104	150kHz
310kHz	CT103	310kHz



LW TRACKING ADJUSTMENT	
Adjust for a maximum reading on VOM ①.	
L102	190kHz
CT102	310kHz


LW antenna selector
S101
INT
EXT
L101

(AEP MODEL)

LW ANTENNA COIL ADJUSTMENT	
Adjust for a maximum reading on VOM ①.	
L101	190kHz

FM SECTION

FM DISCRIMINATOR ALIGNMENT 1

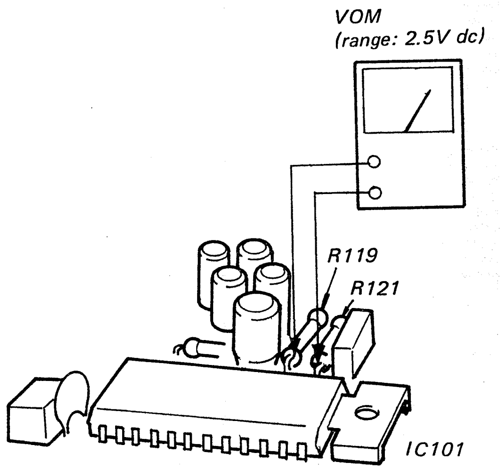
Setting:

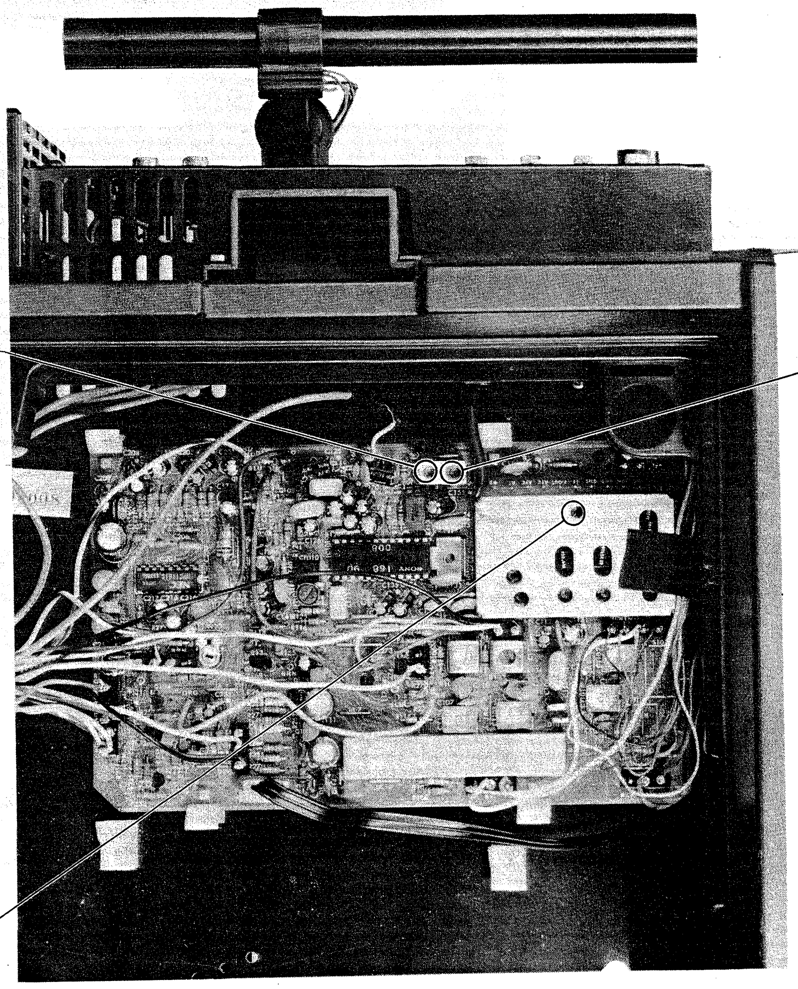
Control Unit: attached on the set (manual operation)
MANUAL TUNER FUNCTION switch: FM
MODE switch: MONO
TUNING: Detuned position

Procedure:

Adjust the orange core (primary-side) of L110 for 0V reading on VOM.

Note: When replacing the ceramic filter (CFU101), perform this alignment.

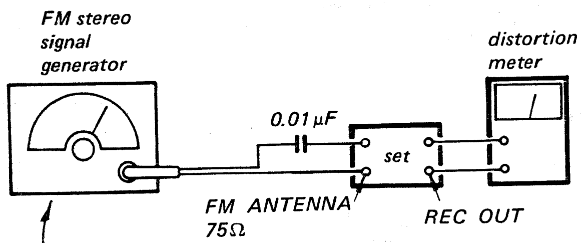

VOM
(range: 2.5V dc)
R119
R121
IC101


L110
L110
T1

FM DISCRIMINATOR ALIGNMENT 2

Setting:

Control Unit: attached on the set (manual operation)
MANUAL TUNER FUNCTION switch: FM
MODE switch: MONO


FM stereo signal generator
distortion meter
0.01μF
set
FM ANTENNA 75Ω
REC OUT

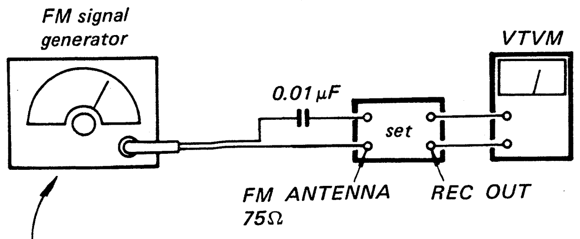
carrier frequency	98MHz
Output level:	1mV (60dB)
Modulation:	400Hz, 75kHz deviation (100%)

Procedure:

Adjust the black core (secondary side) of L110 for minimum distortion.

Since the FM front-end is supplied as an adjusted block part, FM IF ALIGNMENT, FM FREQUENCY COVERAGE ADJUSTMENT (1) and FM TRACKING ADJUSTMENT are unnecessary for ordinary service.

FM IF ALIGNMENT


FM signal generator
VTVM
0.01μF
set
FM ANTENNA 75Ω
REC OUT

Carrier frequency:	98MHz
Output level:	12.5μV (22dB)
Modulation:	400Hz, 75kHz deviation (100%)

Setting:

Control Unit: attached on the set (manual operation)
MANUAL TUNER FUNCTION switch: FM
MODE switch: MONO

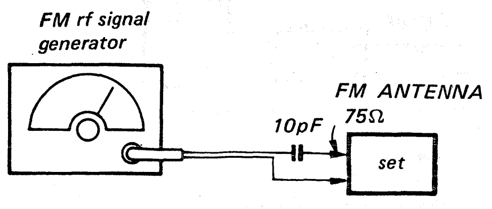
Procedure:

Adjust T1 for a maximum reading on VTVM.

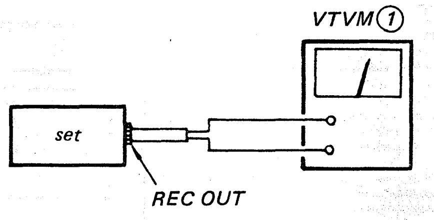
Since the FM front-end is supplied as an adjusted block part, FM IF ALIGNMENT, FM FREQUENCY COVERAGE ADJUSTMENT (1) and FM TRACKING ADJUSTMENT are unnecessary for ordinary service.

Setting:

Control Unit: attached on the set (manual operation)
MANUAL TUNER FUNCTION switch: FM
MODE selector: MONO


FM rf signal generator
FM ANTENNA
75Ω
10pF
set

Modulation: 400Hz, 75kHz deviation (100%)


VTVM①
set
REC OUT

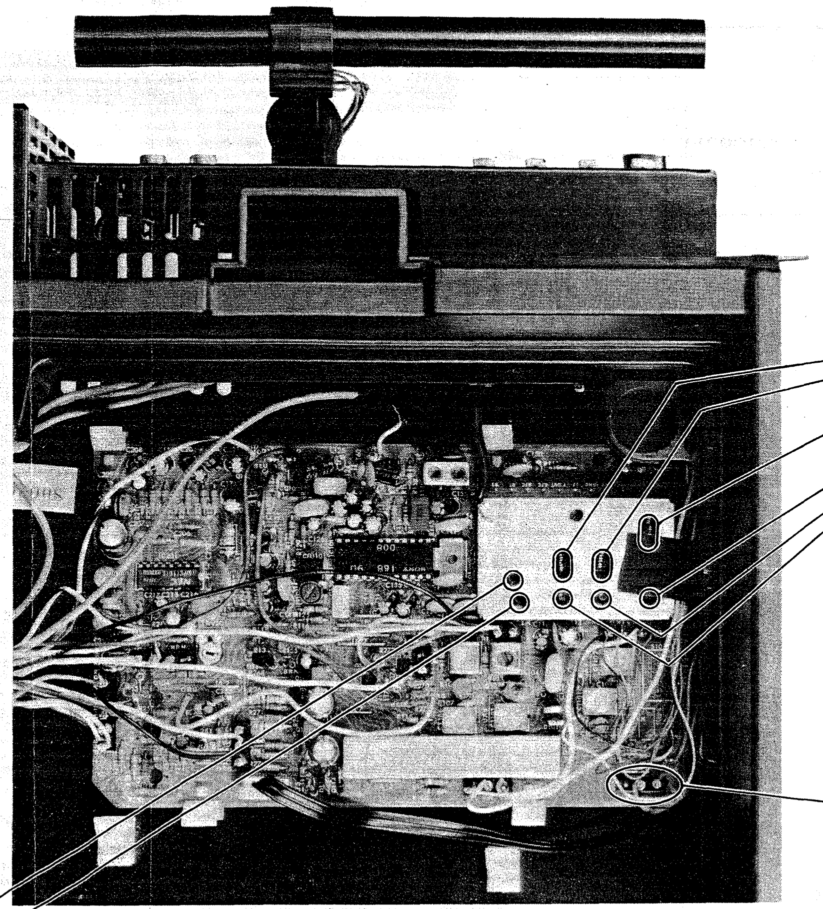
- Repeat the procedures in each adjustment several times, and the frequency coverage and tracking adjustments should be finally done by the trimmer capacitors.

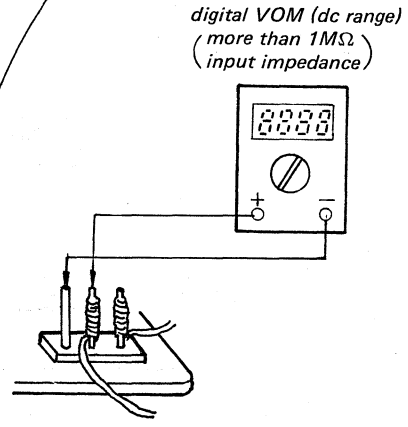
FM FREQUENCY COVERAGE ADJUSTMENT (1)

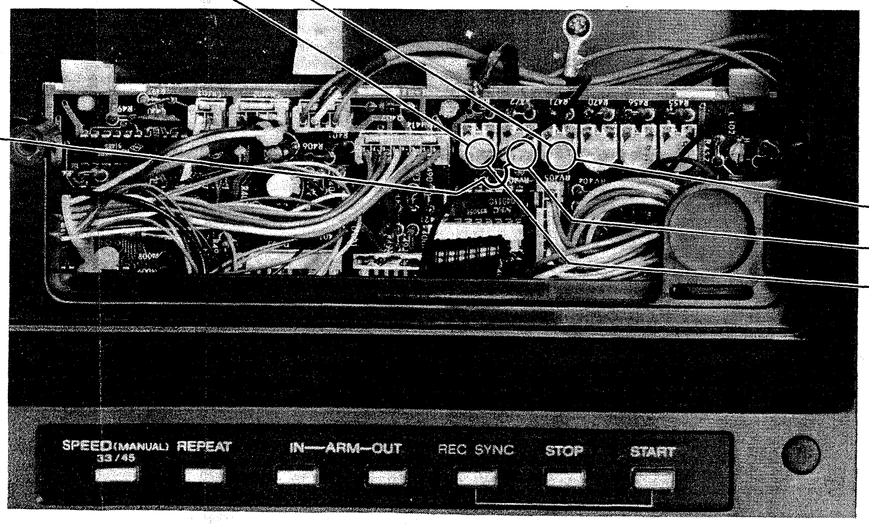
	Dial Indication	Digital VOM Reading	Adjustment Part
Tuning Control Voltage Adjustment	maximum frequency	23V	RV1405
	minimum frequency	2.75V	RV1407
	Adjust for a specified reading on digital VOM.		
Local Oscillator Frequency Adjustment	Dial Indication	FM Rf Signal Generator Frequency	Adjustment Part
	90MHz	90MHz	L7
	106MHz	106MHz	TC4
	Adjust for a maximum reading on VTVM ①.		
Dial Pointer Setting	Dial Indication	FM Rf Signal Generator Frequency	Adjustment Part
	98MHz	98MHz	RV1406
	Adjust for a maximum reading on VTVM ①.		

FM TRACKING ADJUSTMENT

Adjust for a maximum reading on VTVM①.	
L2/L4/L5	90MHz
TC1/TC2/TC3	106MHz




digital VOM (dc range)
(more than 1MΩ input impedance)
+
−


SPEED (MANUAL) 33/45
REPEAT
IN—ARM—OUT
REC SYNC
STOP
START

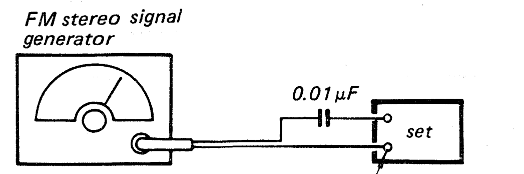
FM FREQUENCY COVERAGE ADJUSTMENT (2)		DIAL INDICATION
Adjust for a maximum reading on VOM①.		
RV405	106MHz	106MHz
RV406	98MHz	98MHz
RV407	90MHz	90MHz

VCO Adjustment

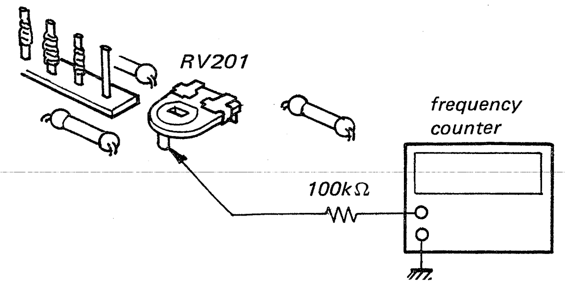
Setting:

Control Unit: attached on the set (manual operation)
MANUAL TUNER FUNCTION switch: FM
MODE switch: STEREO/FM-AM MUTING

A) Regular Method


FM stereo signal generator
0.01μF
set
FM ANTENNA 75Ω

Carrier frequency: *98MHz*
Output level: *1mV*
Modulation: *no modulation*


RV201
frequency counter
100kΩ

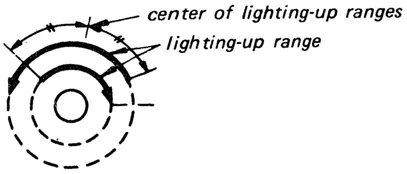
Procedure:

Adjust RV201 for 76kHz ±100Hz on the frequency counter.

B) Simple Method

Procedure:

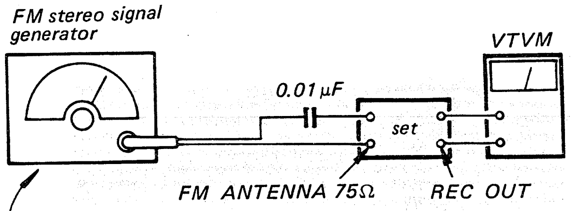
1. Tune the set to the FM stereo broadcasting signal.
2. Turn RV201 clockwise or counterclockwise and memorize the lighting-up range of STEREO lamp.
3. Secure at the center in lighting-up range of both turns as shown below.


center of lighting-up ranges
lighting-up range

FM Stereo Separation Adjustment

Setting:

Control Unit: attached on the set (manual operation)
MANUAL TUNER FUNCTION switch: FM
MODE switch: STEREO/FM-AM MUTING


FM stereo signal generator
VTVM
0.01μF
set
FM ANTENNA 75Ω
REC OUT

Carrier frequency: *98MHz*
Output level: *1mV (60dB)*
Modulation:
Audio (400Hz): 20kHz deviation (50%)
Pilot (19kHz): 6.3kHz deviation (16%)
Sub channel (38kHz): 20kHz deviation (50%)

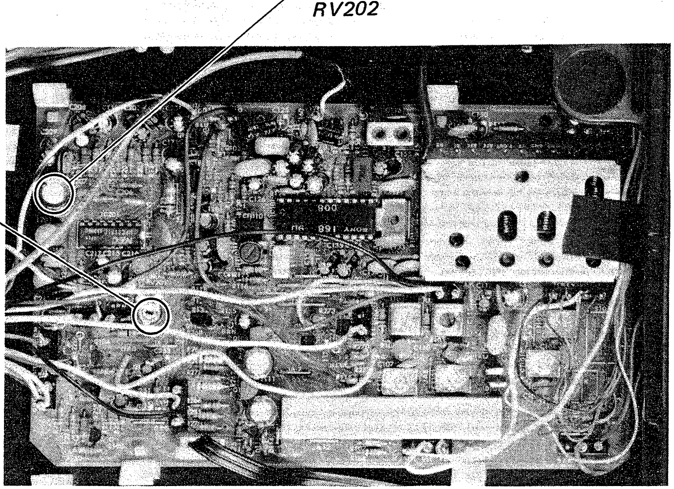
Procedure:

FM stereo signal generator output channel	VTVM connection	VTVM reading (dB)
L-CH	L-CH	Ⓐ
R-CH	L-CH	Ⓑ Adjust RV202 for minimum reading;
R-CH	R-CH	Ⓒ
L-CH	R-CH	Ⓓ Adjust RV202 for minimum reading.

L-CH Stereo separation: Ⓐ – Ⓑ
R-CH Stereo separation: Ⓒ – Ⓓ

The separations of both channels should be equal.

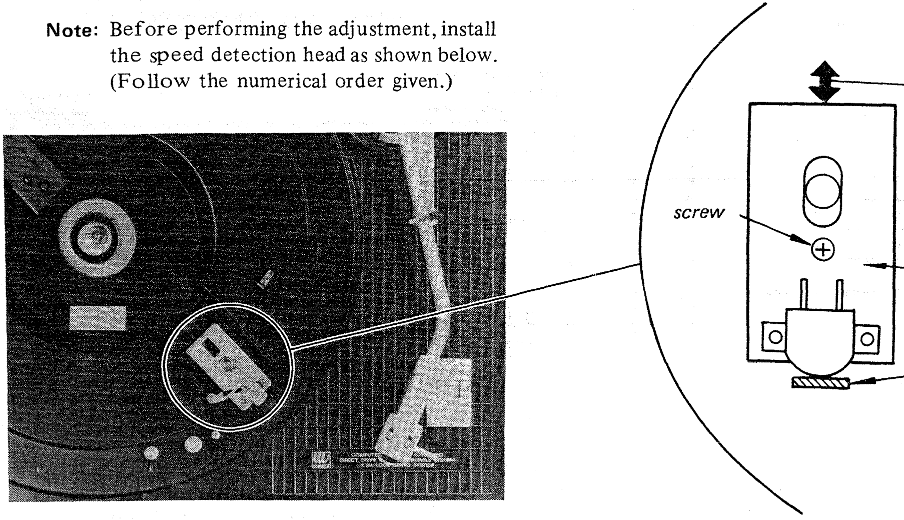
The difference between separations Ⓐ–Ⓑ and Ⓒ–Ⓓ are to be equal.


RV202
RV201

• RECORD PLAYER SECTION

Speed Detection Head Output Adjustment

Note: Before performing the adjustment, install the speed detection head as shown below. (Follow the numerical order given.)



❶ *Loosen the screw and move the head bracket toward the center shaft.*

❷ *Place a card (about 0.5mm thick) against the head.*

❸ *Install the turntable.*

❹ *Move the head bracket until the card touches the turntable. (Perform this installment through the hole in the turntable.)*

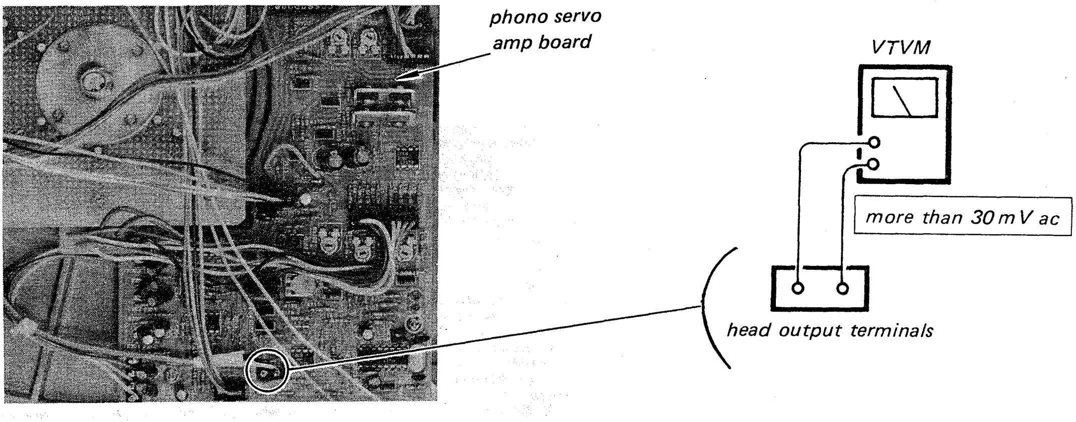
❺ *Remove the turntable. Tighten the screw securely and remove the card.*

Setting:

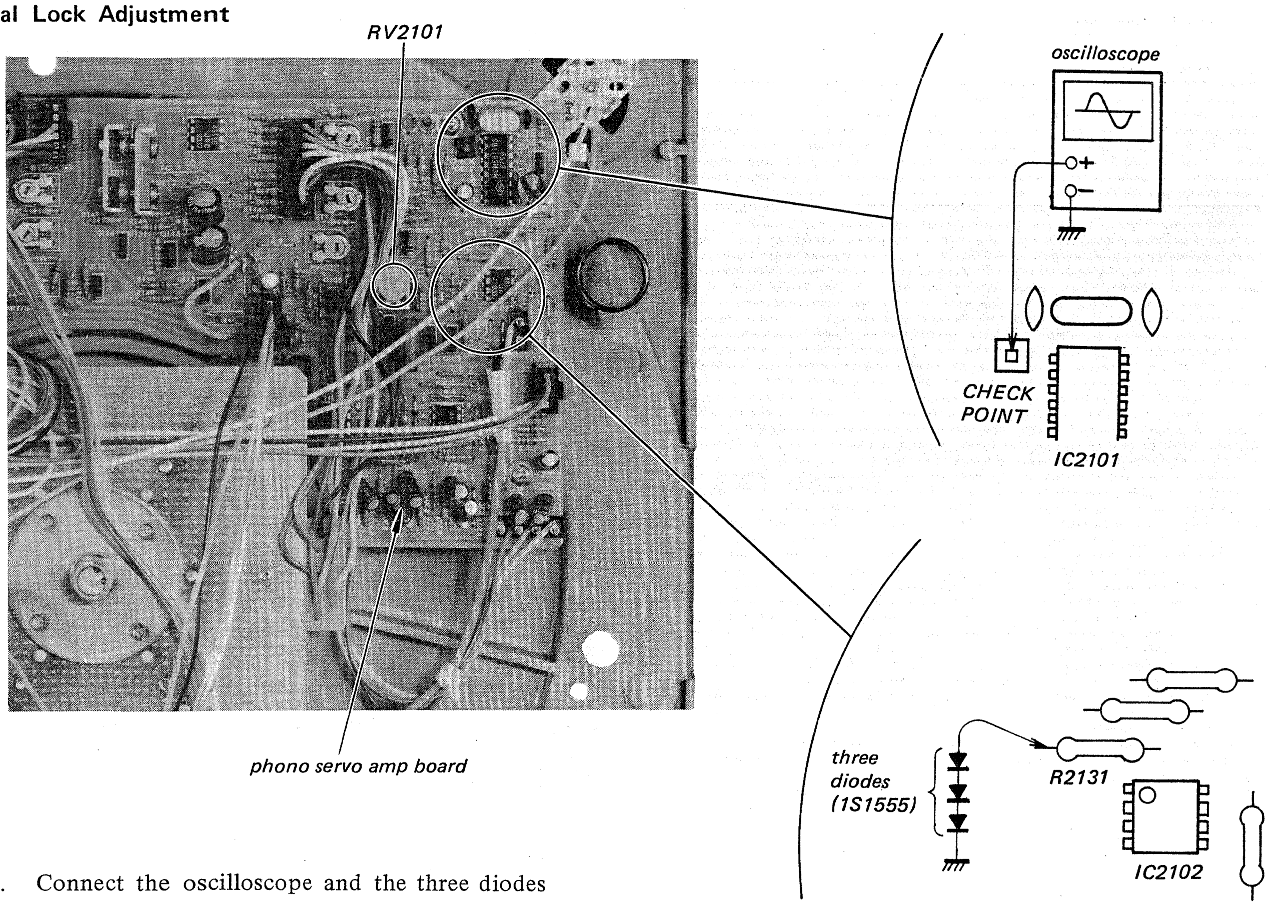
speed: 33 rpm
turntable: rotating

1. Loosen the screw and adjust the position of the head bracket to obtain more than 30mV ac at the head output terminals.
2. After performing the adjustment, confirm that the rotation of the turntable is normal. If the adjustment is not proper, it will result in worse wow and flutter.

Note: Confirm that there is more than 0.3 mm clearance between the magnetic coated rim of the turntable and the speed detection head.



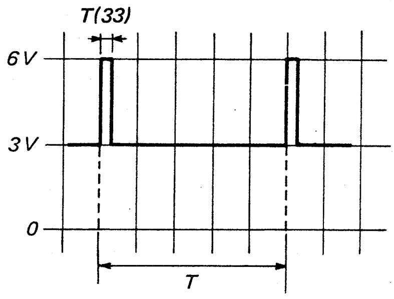
X'tal Lock Adjustment


RV2101
phono servo amp board
oscilloscope
+
–
CHECK POINT
IC2101
three diodes (1S1555)
R2131
IC2102

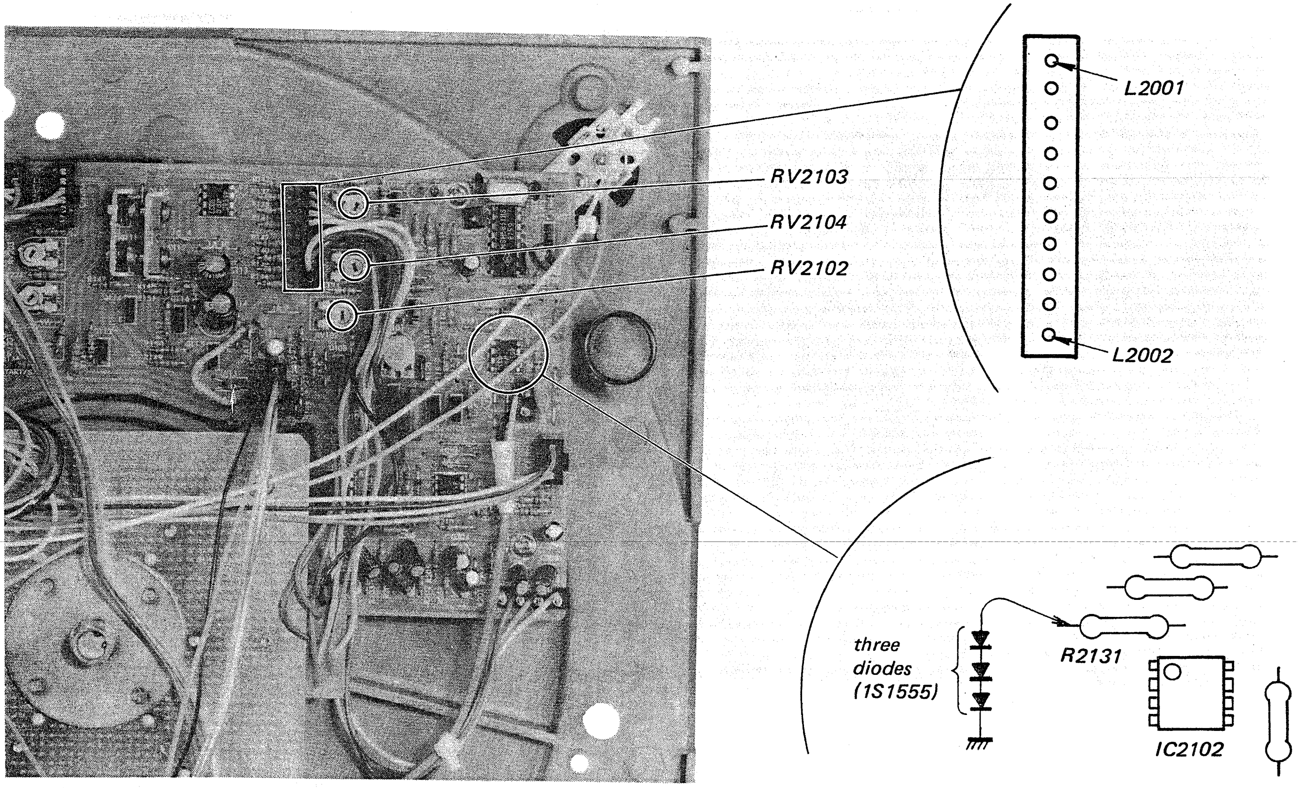
1. Connect the oscilloscope and the three diodes (1S1555).
2. Adjust RV2101 so that the waveform on the oscilloscope becomes as shown on the right at 33 rpm.

- The waveform on the oscilloscope:

$$\frac{T(33)}{T} \times 100 = 5(\%)$$



Gain Offset Adjustment

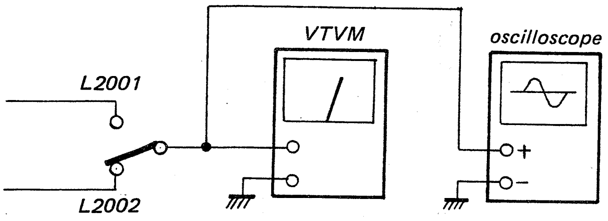

RV2103
RV2104
RV2102
L2001
L2002
three diodes (1S1555)
R2131
IC2102

Hall Device Gain Adjustment

Setting:

SPEED switch: 33

1. Connect VTVM or oscilloscope to L2001 and read it.
2. Connect VTVM or oscilloscope to L2002 and adjust RV2102 for the same reading in step 1.


VTVM
oscilloscope
L2001
L2002
+
−

Motor Amp Offset Adjustment

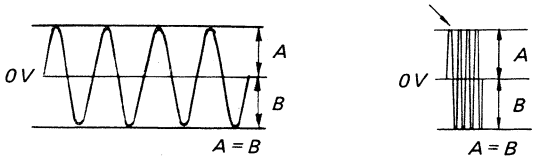
Setting:

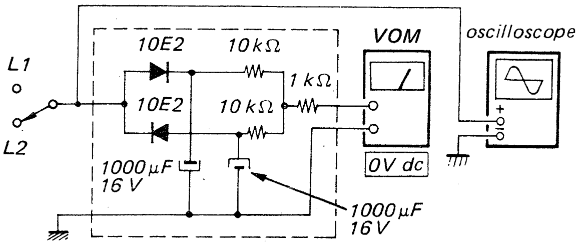
SPEED switch: 33

1. Connect VOM or oscilloscope to L2001 and adjust RV2103 for 0V dc VTVM reading or for the waveform on oscilloscope as shown below.
2. Connect VTVM or oscilloscope to L2002 and adjust RV2104 for 0V dc VTVM reading or for the waveform on oscilloscope as shown below.

Waveform on Oscilloscope:

Note: Set the sweep time longer for easy waveform checking.


0V
A
B
A = B
0V
A
B
A = B

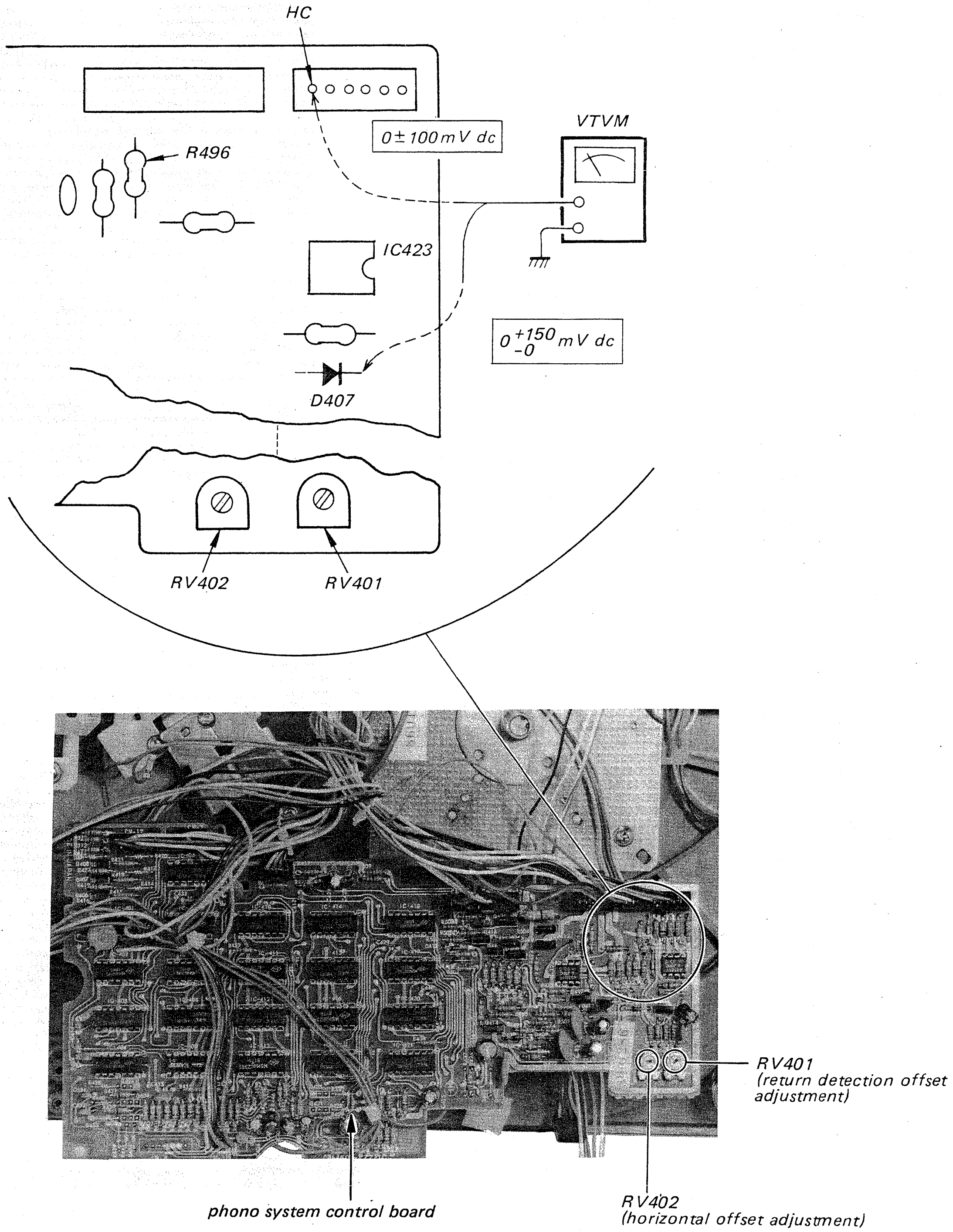

L1
L2
10E2
10E2
10 kΩ
10 kΩ
1 kΩ
1000 μF 16 V
1000 μF 16 V
VOM
0V dc
oscilloscope
+

Horizontal Offset Adjustment

1. Set the ANTI-SKATING knob to the position other than BALANCE.
2. Fix the tonearm to the tonearm rest.
3. Adjust RV402 so that the HC voltage is within 0 ± 100 mV dc.

Return Detection Offset Adjustment

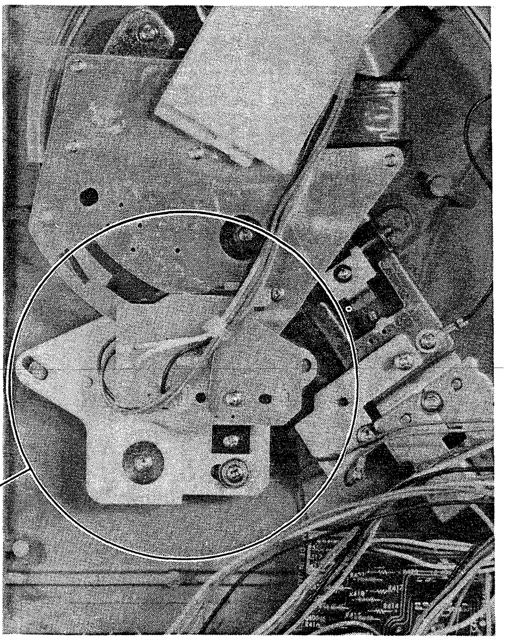
1. Set the ANTI-SKATING knob to the 'BALANCE' position.
2. Fix the tonearm to the tonearm rest.
3. Adjust RV401 to obtain 0^{+150}_{-0} mV dc at D407 (cathode side).


HC
R496
0 ± 100 mV dc
VTVM
IC423
0^{+150}_{-0} mV dc
D407
RV402
RV401
RV401
(return detection offset adjustment)
phono system control board
RV402
(horizontal offset adjustment)

Lead-in Adjustment

To adjust 30, 25, 17cm lead-in position at the same time, adjust by moving the position of the photo-interrupter.

1. Loosen the supporting screw.
2. Adjust the lead-in position by moving the cam IN or OUT.
3. Tighten supporting screw securely.



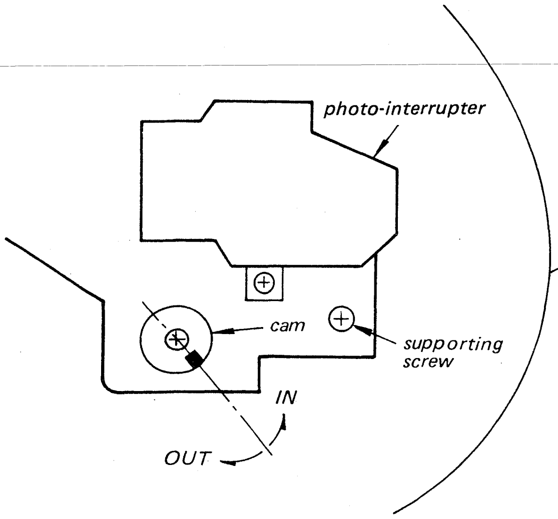
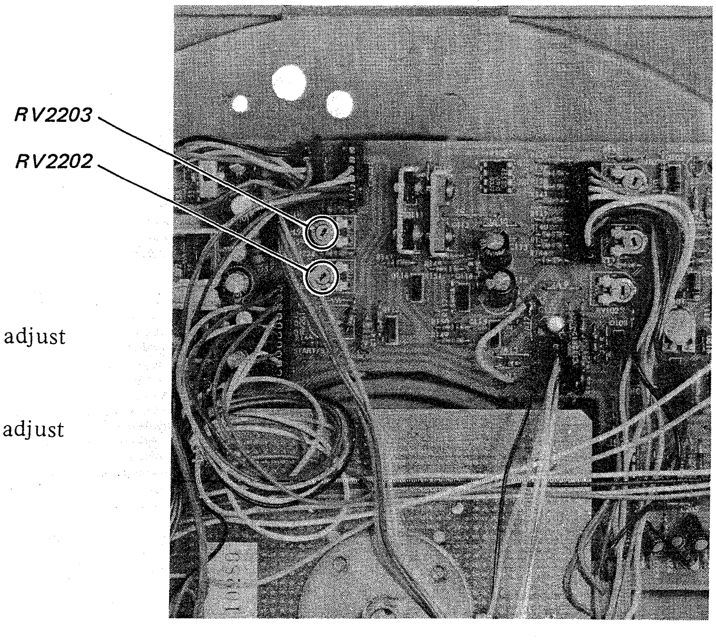


photo-interrupter
cam
supporting screw
IN
OUT


RV2203
RV2202

- **25 cm lead-in**
  To adjust only the 25 cm lead-in position, adjust RV2202.
- **17 cm lead-in**
  To adjust only the 17 cm lead-in position, adjust RV2203.

• CASSETTE RECORDER SECTION

Note: The adjustment should be performed in the order given in this service manual.
The adjustments should be performed for both L-CH and R-CH.

- Set the BIAS and EQ switches according to the tape as follows.

Tape	BIAS switch	EQ switch
CS-10	MED	TYPE I
CS-20	HIGH	TYPE II
CS-30	MED	TYPE III
CS-40	METAL	TYPE IV

- Switches and controls should be set as follows unless otherwise specified.

DOLBY NR. . . . . .OFF
EQ . . . . .TYPE
BIAS. . . . . .MED
TIMER REC . . . . .OFF
REC MUTE. . . . . .OFF

- Standard Record:

Deliver the standard input signal level to the input jack and set the REC LEVEL control to obtain the standard output signal level.

Standard Input Level

	MIC	AUX
source impedance	600Ω	600Ω
input level	0.77mV (−60dB)	25mV (−30dB)

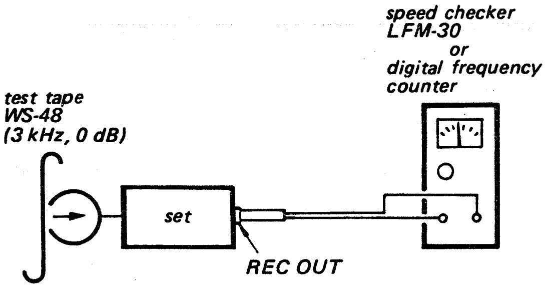
Standard Output Level

	REC OUT
load impedance	47kΩ
output level	0.14V (−15dB)

Tape Speed Adjustment

Procedure:

Mode: playback


speed checker
LFM-30
or
digital frequency counter
test tape
WS-48
(3 kHz, 0 dB)
set
REC OUT

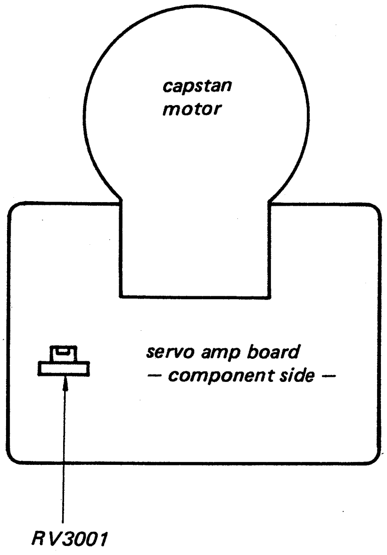
Specification:

Speed checker	Digital frequency counter
−0.7 to +0.7%	2,980 to 3,020Hz

Frequency difference between the beginning and the end of the tape should be within 0.7% (20 Hz).

Adjustment Location:

– servo amp board –

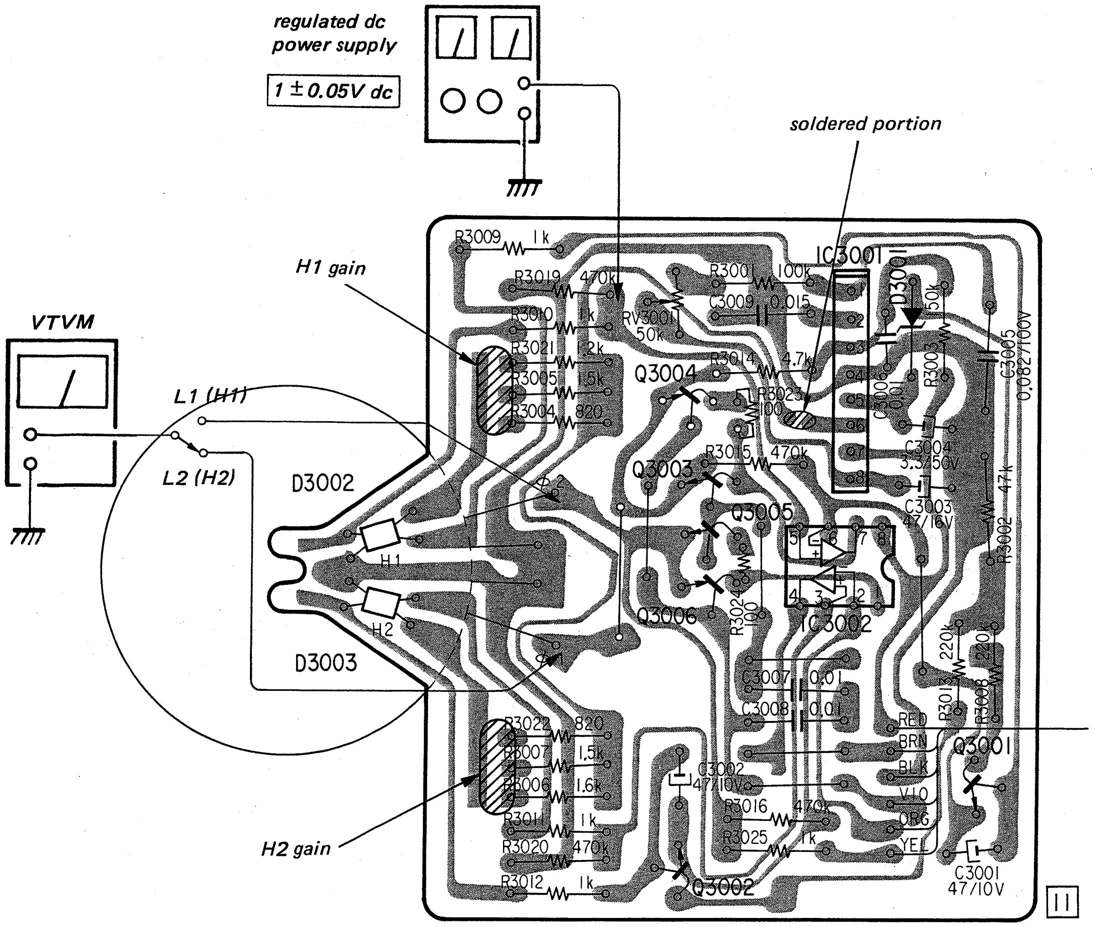

capstan motor
servo amp board
– component side –
RV3001

Capstan Motor Gain Adjustment

Procedure:

Mode: playback

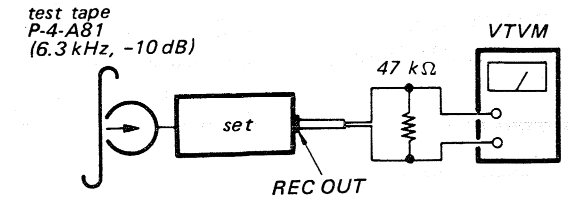
1. Unsolder the soldered portion as shown below and connect the regulated power supply.
2. Connect VTVM to L1 and change the pattern connection for 2.83 ± 0.25V ac on the VTVM.
3. Connect VTVM to L2 and change the pattern connection for 2.83 ± 0.25V ac on the VTVM.
4. Solder the portion which has been unsoldered


regulated dc power supply
1 ± 0.05V dc
soldered portion
H1 gain
VTVM
L1 (~~H1~~)
L2 (H2)
D3002
D3003
H1
H2
H2 gain
IC3001
IC3002
D3001
Q3001
Q3002
Q3003
Q3004
Q3005
Q3006
R3009 1k
R3019 470k
R3010 1k
R3021 1.2k
R3005 1.5k
R3004 820
R3001 100k
C3009 0.015
RV3001 50k
R3014 4.7k
R3023 100
R3015 470k
R3024 100
R3003 150k
C3006 0.01
C3005 0.082/100V
C3004 3.3/50V
C3003 47/16V
R3002 47k
R3013 220k
R3008 220k
C3007 0.01
C3008 0.01
R3022 820
R3007 1.5k
R3006 1.6k
R3011 1k
R3020 470k
R3012 1k
C3002 47/10V
R3016 470k
R3025 1k
RED
BRN
BLK
VIO
ORG
YEL
C3001 47/10V
11

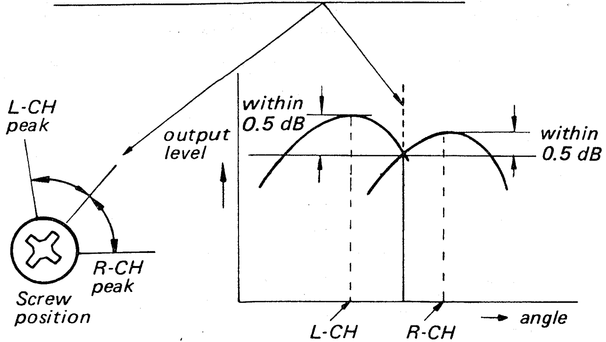
Record/playback Head Azimuth Adjustment

Procedure:

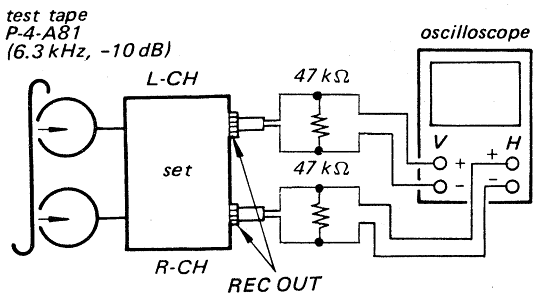
1. Mode: playback

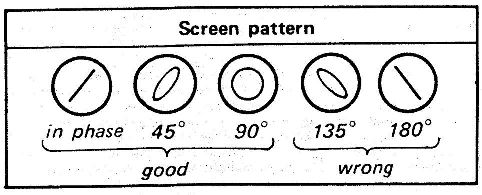

test tape
P-4-A81
(6.3 kHz, -10 dB)
VTVM
47 kΩ
set
REC OUT

2. Turn the adjustment screw for the maximum output levels. If these levels do not match, turn the adjustment screw until both of output levels match together within 0.5 dB.

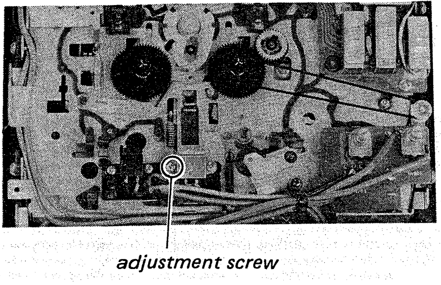

L-CH
peak
output
level
within
0.5 dB
within
0.5 dB
R-CH
peak
Screw
position
L-CH
peak
R-CH
peak
angle

3. Phase Check
   Mode: playback


test tape
P-4-A81
(6.3 kHz, -10 dB)
oscilloscope
L-CH
47 kΩ
set
47 kΩ
V
H
+
+
-
-
R-CH
REC OUT


Screen pattern
in phase
45°
90°
135°
180°
good
wrong

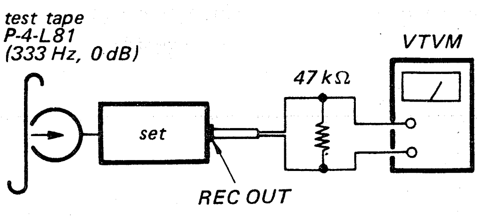
Adjustment Location:


adjustment screw

Playback Level Adjustment

Procedure:

Mode: playback


test tape
P-4-L81
(333 Hz, 0 dB)
VTVM
47 kΩ
set
REC OUT

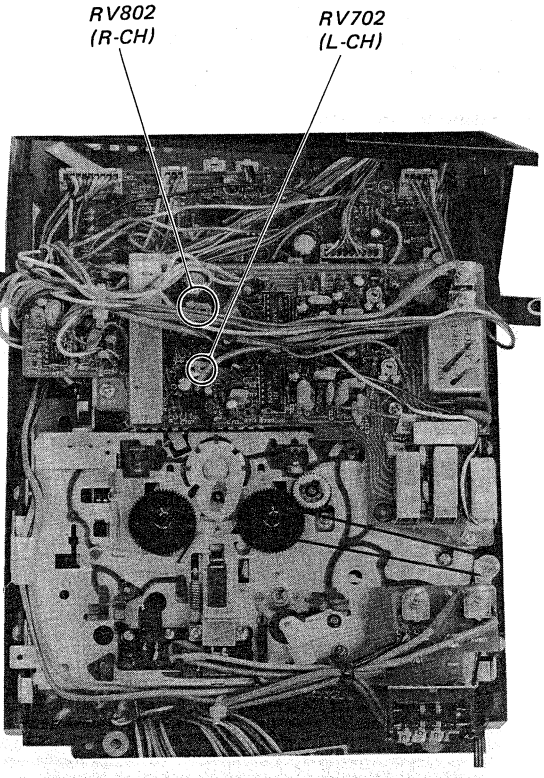
Specification:

REC OUT level: 0.52 – 0.59 V
(–3.5 to –2.5 dB)
Level difference between channels:
less than 0.5 dB

Check that the REC OUT level does not change in playback mode while changing the mode from playback to stop several times.

Adjustment Location:

— cassette board —


RV802
(R-CH)
RV702
(L-CH)

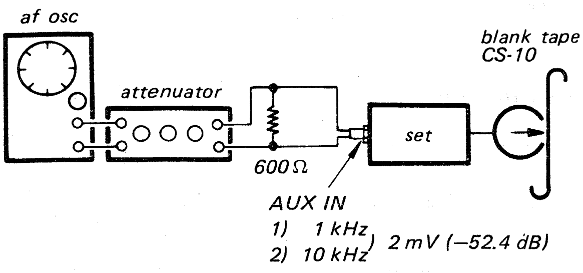
Record Bias Adjustment

Setting:

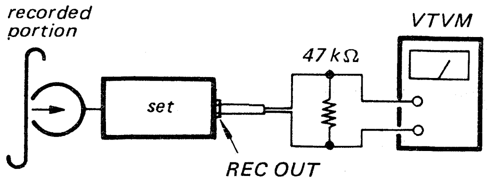
REC LEVEL control: standard record
(See page 45.)

Procedure:

1. Mode: record


af osc
attenuator
600Ω
set
blank tape
CS-10
AUX IN
1) 1 kHz
2) 10 kHz
2 mV (−52.4 dB)

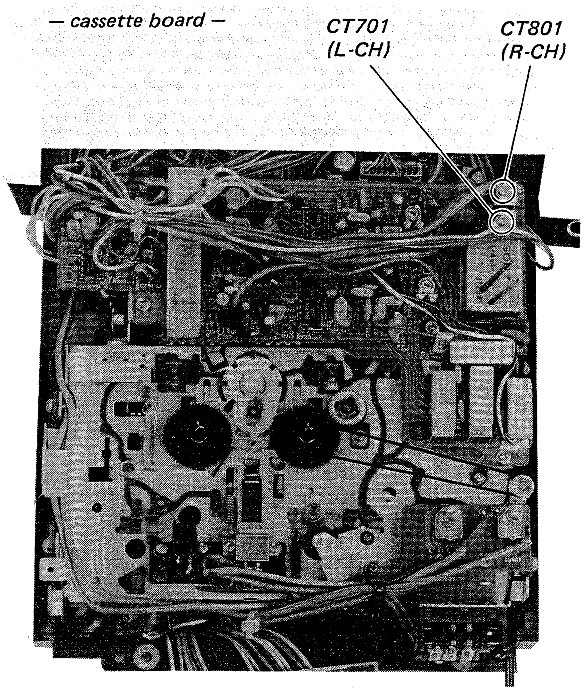
2. Mode: playback


recorded
portion
set
47 kΩ
VTVM
REC OUT

Confirm that the REC OUT level of 10kHz signal is −0.5 ± 0.5 dB relative to that of 1 kHz.
If necessary, adjust CT701 (L-CH) and CT801 (R-CH) and repeat steps 1 and 2.

Adjustment Location:

— cassette board —


CT701
(L-CH)
CT801
(R-CH)

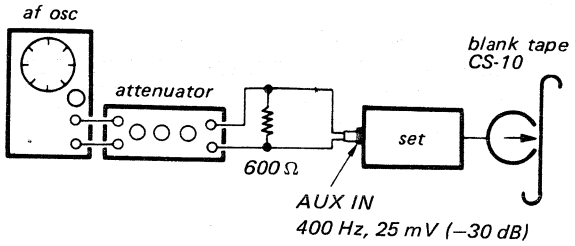
Record Level Adjustment

Setting:

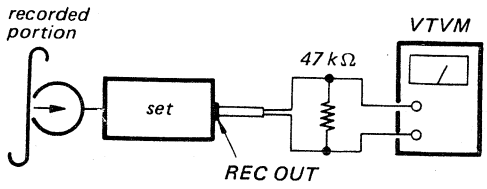
DOLBY switch: OFF
REC LEVEL control: standard record
(See page 45.)

Procedure:

1. Mode: record


af osc
attenuator
600Ω
set
blank tape
CS-10
AUX IN
400 Hz, 25 mV (−30 dB)

2. Mode: playback

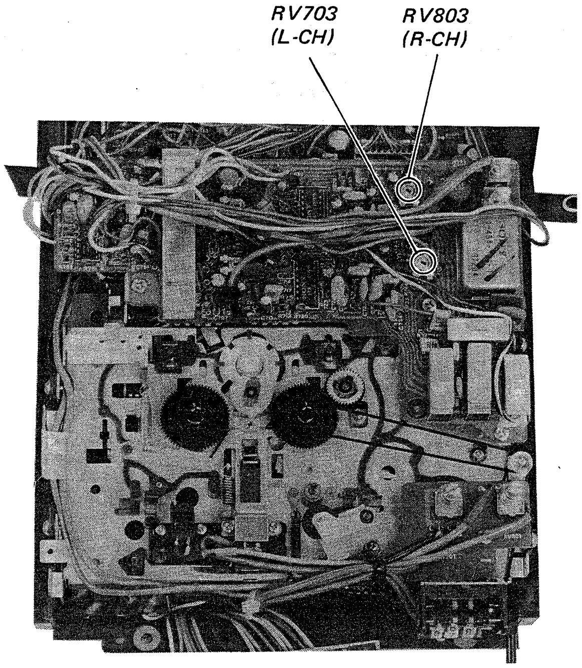

recorded
portion
set
47 kΩ
VTVM
REC OUT

Specification:

REC OUT level: 0.14V (−15dB)

Adjustment Location:

— cassette board —

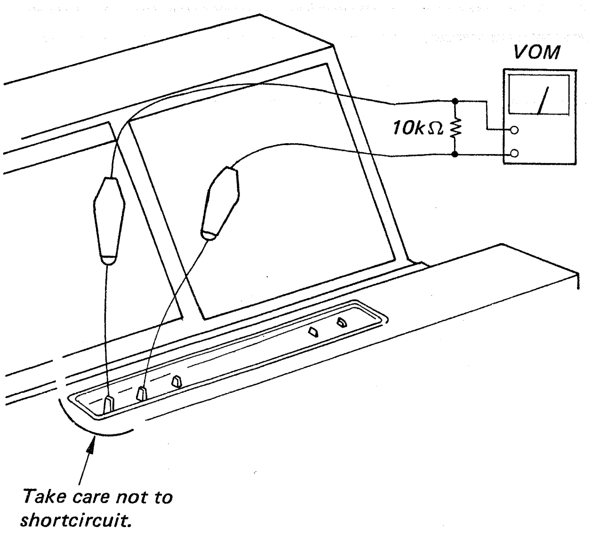

RV703
(L-CH)
RV803
(R-CH)

OTHER SECTION

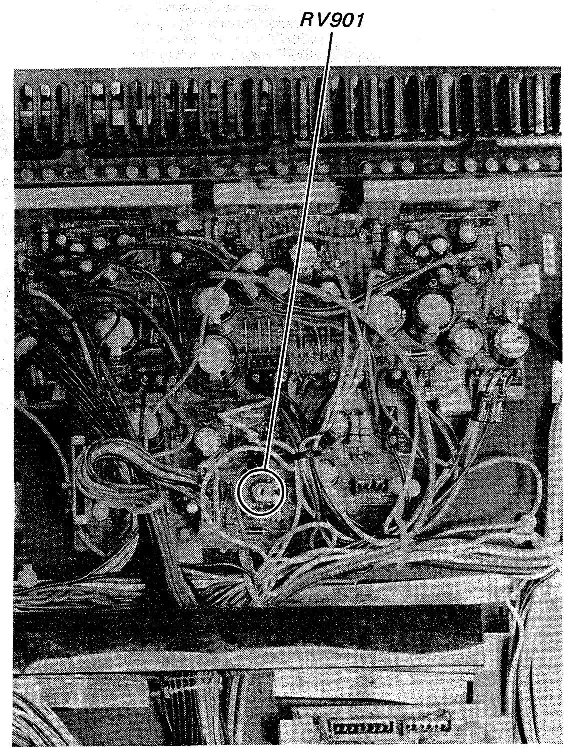
Control Unit Charging Adjustment

Procedure:

Adjust RV901 for 4.1 – 4.2V VOM reading.


VOM
10kΩ
Take care not to shortcircuit.

Adjustment Location: power board

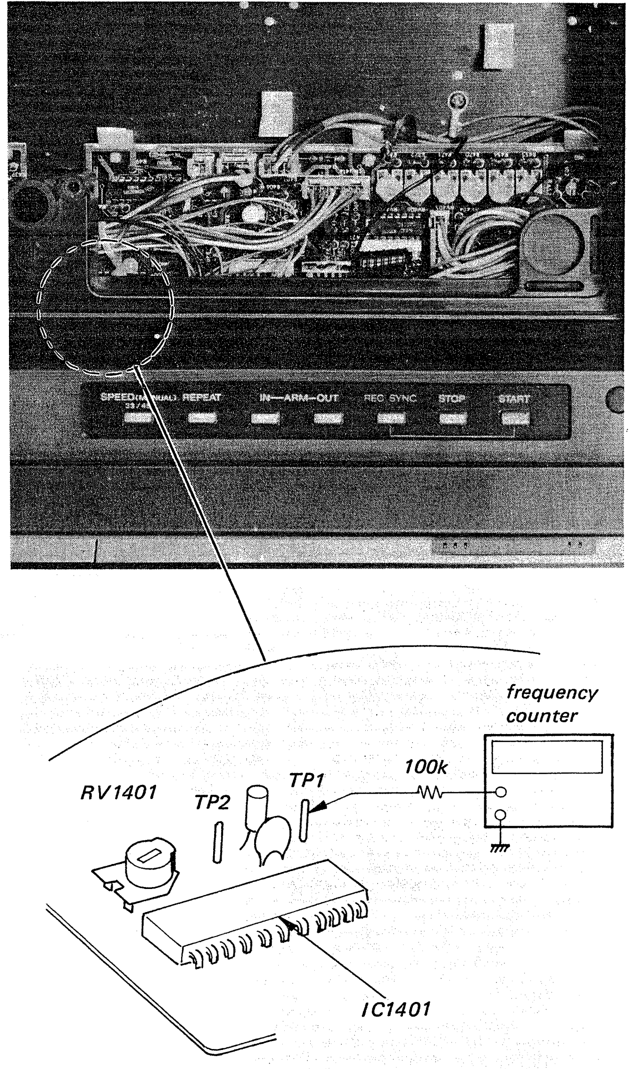


Control Unit Receiving Clock Adjustment

Procedure:

1. Press the VOLUME UP or DOWN button so that the 1 to 4 VOLUME indicator elements light.
2. Adjust RV1401 for 11,000 ± 100Hz reading on the frequency counter.

Adjustment Location: remote control logic board


SPEED
REPEAT
IN—ARM—OUT
REC SYNC
STOP
START
frequency counter
100k
RV1401
TP2
TP1
IC1401

VOLUME Indicator Adjustment

Setting:

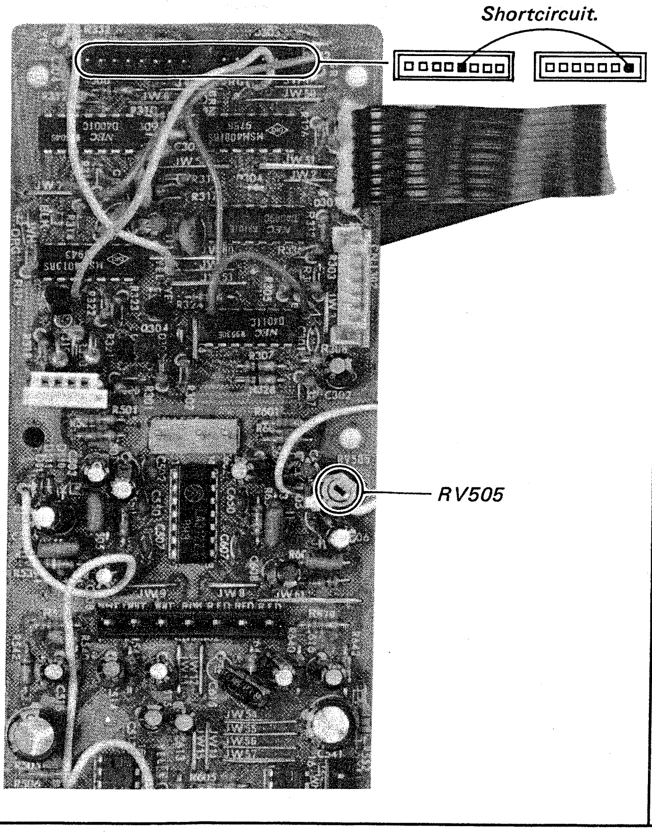
Control Unit: AUX
VOLUME UP (for maximum)
PRESET VOL: MAX

Procedure:

1. Shortcircuit as shown below.
2. Turn RV505 fully clockwise.
3. Turn RV505 counterclockwise and stop it just when the five VOLUME indicator elements light.
4. Press the OFF button and confirm that the five elements light. If necessary, turn RV505 counterclockwise a little so that the fifth element lights.
5. Confirm as follows.

Step	Pressed button	Lighting elements
1	VOLUME DOWN	5 ⟶ 0
2	VOLUME UP	0 ⟶ 5
3	MUTING	0
4	MUTING	5

Adjustment Location: EQ function board

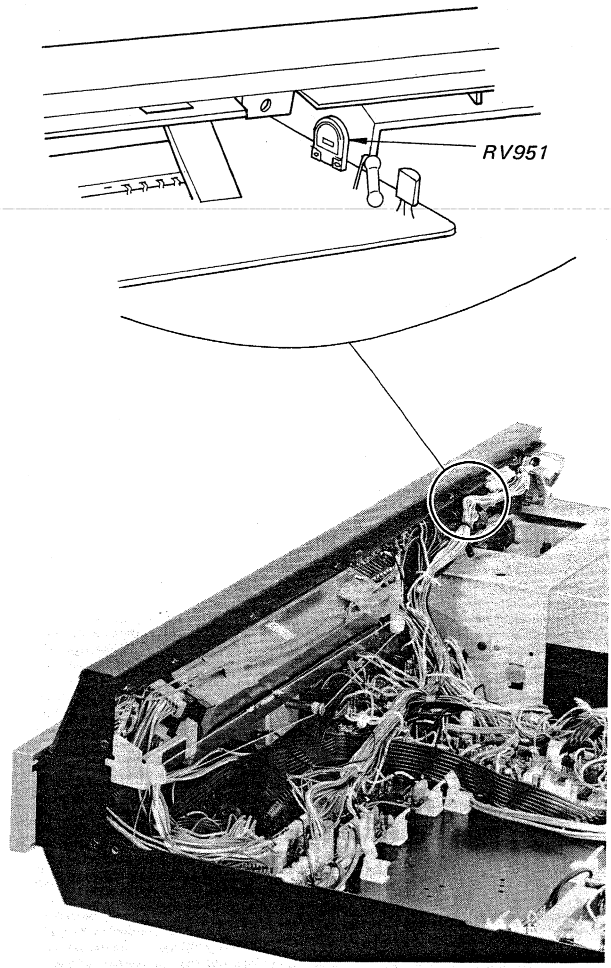


Dimmer Adjustment

Procedure:

Cover the DIMMER window (PC951) by hand and adjust RV951 to dim the time display. Confirm that the time display is brightened automatically when moving the hand.

Adjustment Location: timer (A) board



SECTION 4
DIAGRAMS

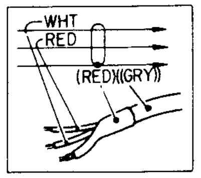
Note For Schematic Diagrams:

- All capacitors are in μF unless otherwise noted. pF : μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in ohms, ¼W unless otherwise noted. kΩ : 1000 Ω, MΩ : 1000 kΩ
- ▣ : nonflammable resistor.
- ▭ : fusible resistor.
- △ : internal component.
- ▭ : panel designation.
- ▭ : adjustment for repair.
- ——— : B+ bus.
- – – – : B– bus.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken under no-signal (detuned) conditions with a VOM (20kΩ/V).
  ( ) : AM
- ➡, ▨ : signal path

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Note For Mounting Diagrams:

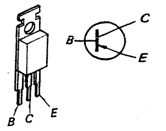
- Color code of sleeving over the end of the jacket.



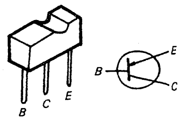
- ■ : part mounted on the conductor side.
- ⬚← : indicates side identified with part number.
- ▲ : nonflammable resistor.
- Ⓕ : fusible resistor.
- ⊗ : Through hole.
- ░ : B + pattern
- ▒ : B – pattern
- ━➡━ : signal path
- ━ ━➡ : L-CH signal path
- ━‥➡ : R-CH signal path
- ——— : component side pattern.

SEMICONDUCTOR LEAD LAYOUTS

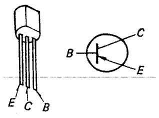
2SA671
2SA755



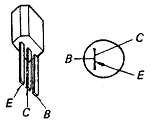
2SA786
2SB642
2SB793



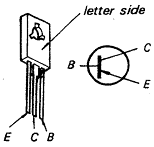
2SA952
2SA1015Y



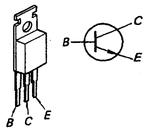
2SA1027R



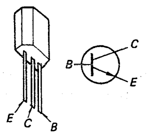
2SB548
2SB731


letter side
C
B
E
E C B

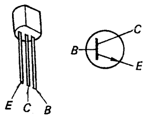
2SB834
2SC1061
2SC1419
2SD880



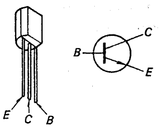
2SC634



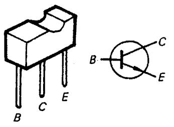
2SC1362
2SC1364
2SC1475
2SC1632
2SC1815
2SC1815Y



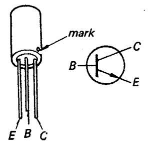
2SC1959
2SD789



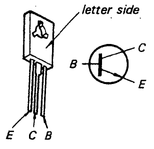
2SC2021
2SD637
2SD973



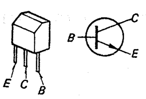
2SD187


mark
C
B
E
E B C

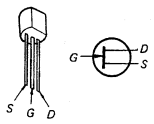
2SD414
2SD809
2SD998


letter side
C
B
E
E C B

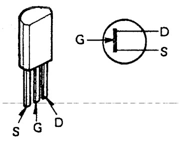
2SD774



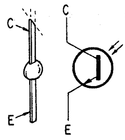
2SK30A



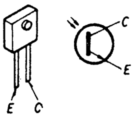
2SK117BL



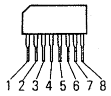
PH101



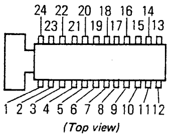
PH103



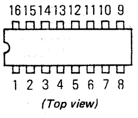
CX069



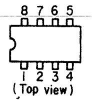
CX168


24 22 20 18 16 14
23 21 19 17 15 13
1 2 3 4 5 6 7 8 9 10 11 12
(Top view)

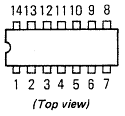
CX174
MSM5811
MSM5953
SN76043N
TC40175BP
µPC1161C
µPD4049C
µPD4050C


16 15 14 13 12 11 10 9
1 2 3 4 5 6 7 8
(Top view)

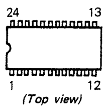
NJM4558
NJM4558DFA
TL489CP
µPC4558
µPC4558C


8 7 6 5
1 2 3 4
(Top view)

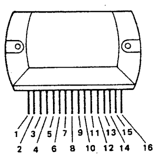
LA3122
MSM4001
MSM4011
MSM4013
MSM4023
MSM4025
MSM4069
TC4078BP
TC4093BP
µPD4001C
µPD4011C
µPD4013C
µPD4023C
µPD4025C
µPD4069C
µPD4071C
µPD4081C


14 13 12 11 10 9 8
1 2 3 4 5 6 7
(Top view)

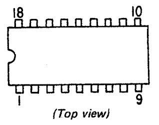
MSM4514


24 13
1 12
(Top view)

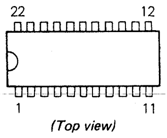
SI1340H


1 3 5 7 9 11 13 15
2 4 6 8 10 12 14 16

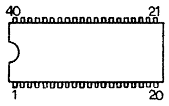
S2600


18 10
1 9
(Top view)

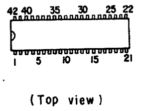
S2601


22 12
1 11
(Top view)

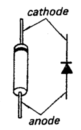
TMS1943N2L



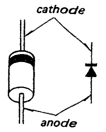
µPD547C042


42 40 35 30 25 22
1 5 10 15 21
(Top view)

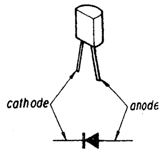
1N60
1S1555
1T22AM
1T261
10E2
HZ33-1
HZ33-2
HZ33-1L
HZ33-2L
HZ33-3L
HZ6B1L
HZ6B2L
RD5.6E27S
RD5.6EB2Z
RD20E5
RM1Z


cathode
anode

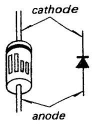
1S1885
S2V20
SR105D


cathode
anode

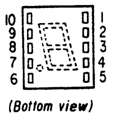
1SV118


cathode
anode

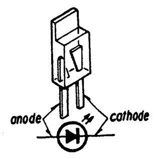
EQA01-06R
EQB01-06
EQB01-07
EQB01-11Z
EQB01-18
EQB01-21
EQB01-32


cathode
anode

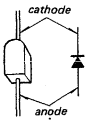
GL9N03DS


10 9 8 7 6
1 2 3 4 5
(Bottom view)

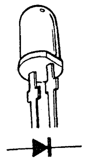
GL9NG521
GL9PR21


anode
cathode

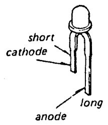
RA1Z


cathode
anode

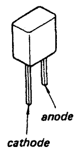
SE303A



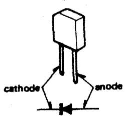
SR105D


short
cathode
long
anode

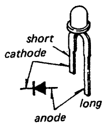
SR110


anode
cathode

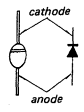
PH302A


cathode
anode

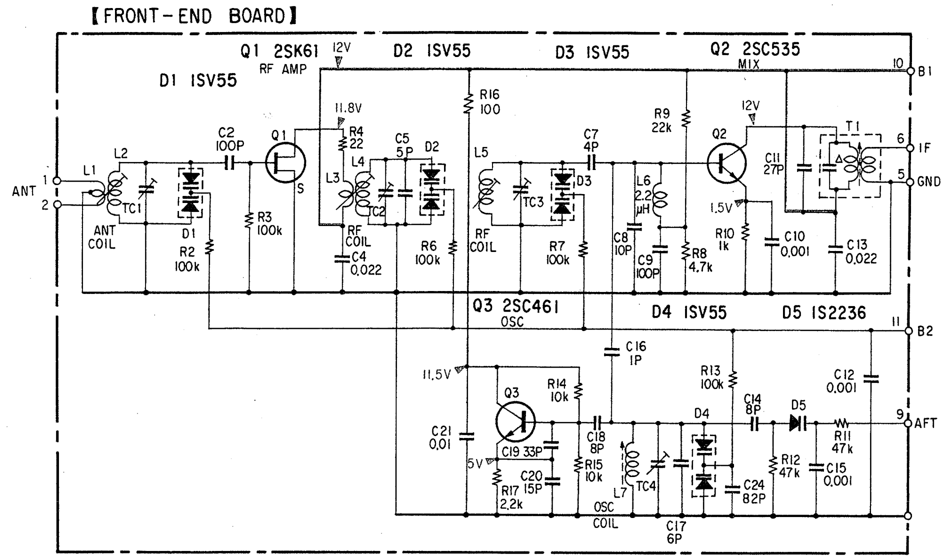
TLR124


short
cathode
long
anode

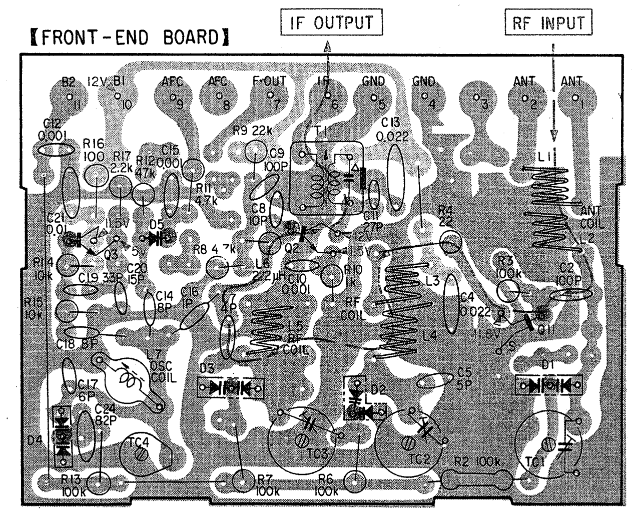
GH3F
U05G


cathode
anode

4-1. SCHEMATIC DIAGRAM

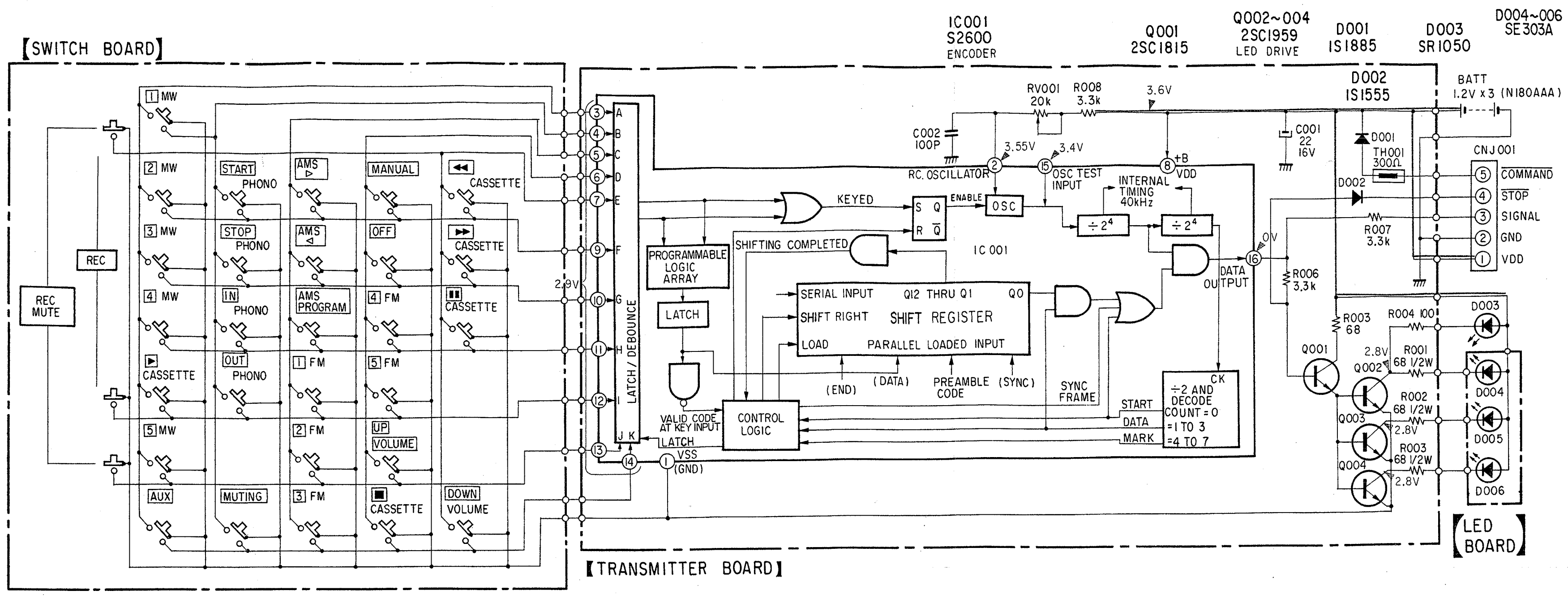

【FRONT-END BOARD】
Q1 2SK61 RF AMP
D1 ISV55
D2 ISV55
D3 ISV55
Q2 2SC535 MIX
Q3 2SC461 OSC
D4 ISV55
D5 IS2236
ANT
ANT COIL
RF COIL
OSC COIL
IF
GND
B1
B2
AFT
12V
11.8V
11.5V
1.5V
5V

4-2. MOUNTING DIAGRAM

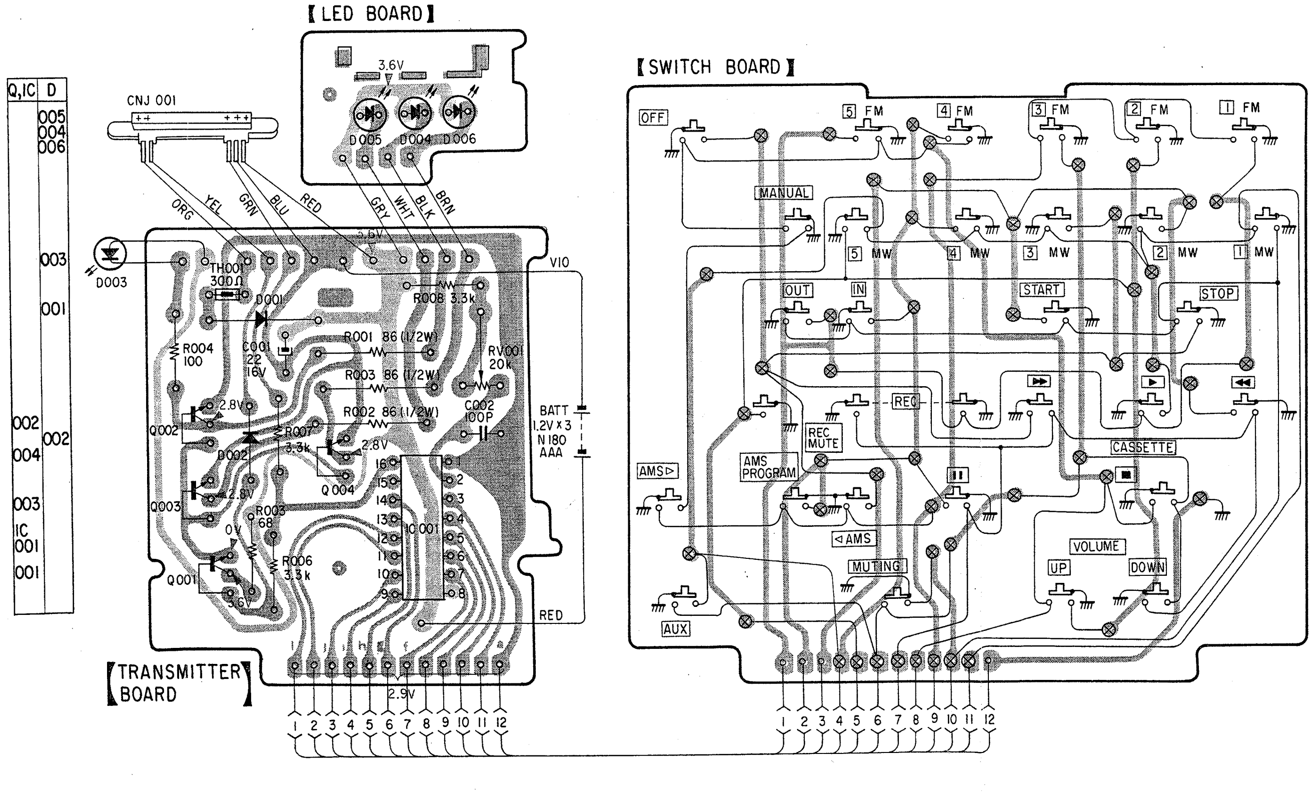

【FRONT-END BOARD】
IF OUTPUT
RF INPUT
B2
12V
B1
AFC
F-OUT
IF
GND
ANT
OSC COIL
RF COIL
ANT COIL

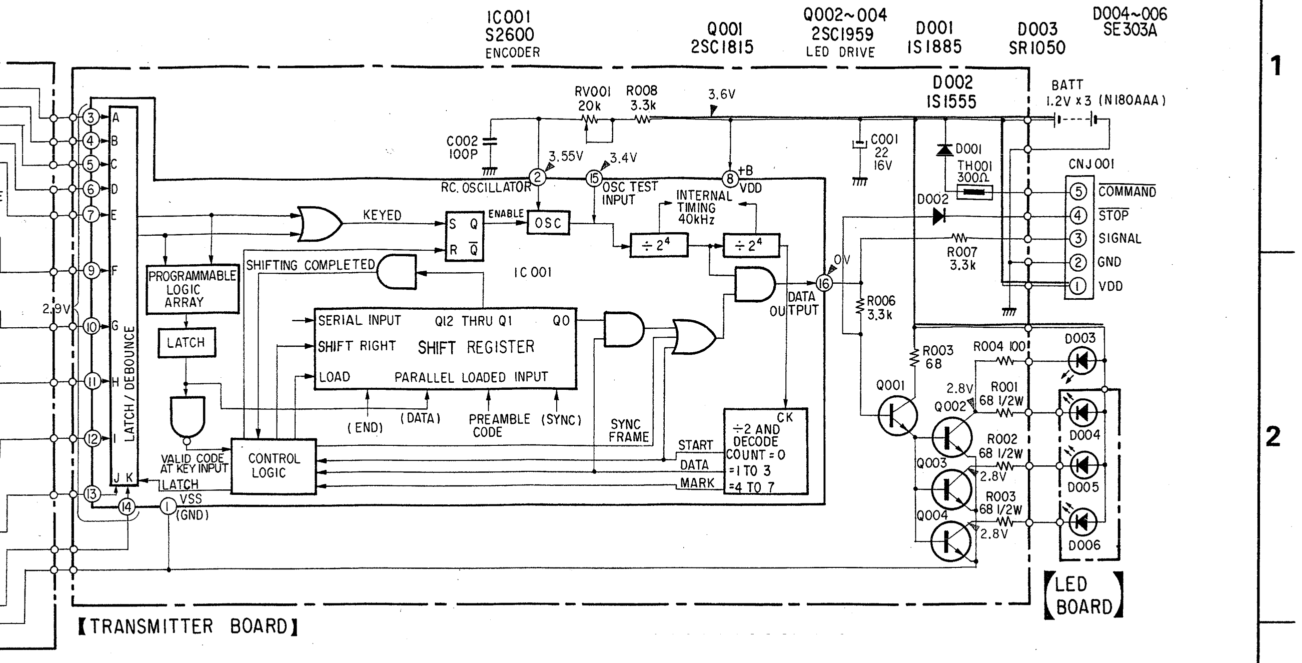
D	4	5	3	2	1
Q	3		2		11

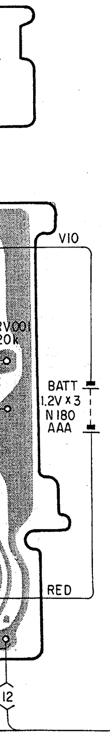
4-3. SCHEMATIC DIAGRAM

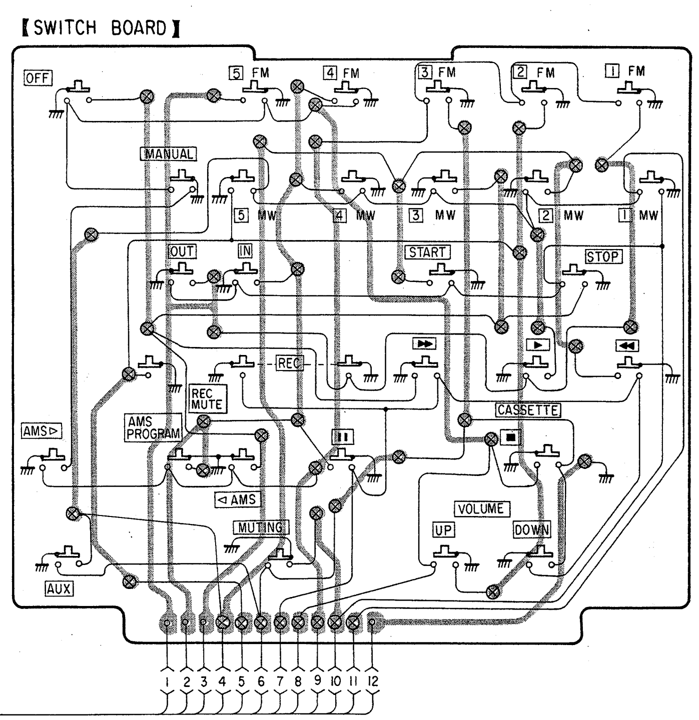

【SWITCH BOARD】
IC001 S2600 ENCODER
Q001 2SC1815
Q002~004 2SC1959 LED DRIVE
D001 IS1885
D002 IS1555
D003 SR1050
D004~006 SE303A
BATT 1.2V x 3 (N180AAA)
CNJ001
COMMAND
STOP
SIGNAL
GND
VDD
REC
REC MUTE
MW
FM
START
STOP
PHONO
CASSETTE
AMS
MANUAL
OFF
IN
OUT
AMS PROGRAM
UP
VOLUME
DOWN
AUX
MUTING
LATCH / DEBOUNCE
PROGRAMMABLE LOGIC ARRAY
LATCH
SHIFTING COMPLETED
KEYED
OSC
RC OSCILLATOR
OSC TEST INPUT
INTERNAL TIMING 40kHz
SERIAL INPUT
SHIFT RIGHT
SHIFT REGISTER
LOAD
PARALLEL LOADED INPUT
Q12 THRU Q1
PREAMBLE CODE
SYNC FRAME
CONTROL LOGIC
VALID CODE AT KEY INPUT
VSS (GND)
DATA OUTPUT
÷2 AND DECODE
START
DATA
MARK
【LED BOARD】
【TRANSMITTER BOARD】

4-4. MOUNTING DIAGRAM

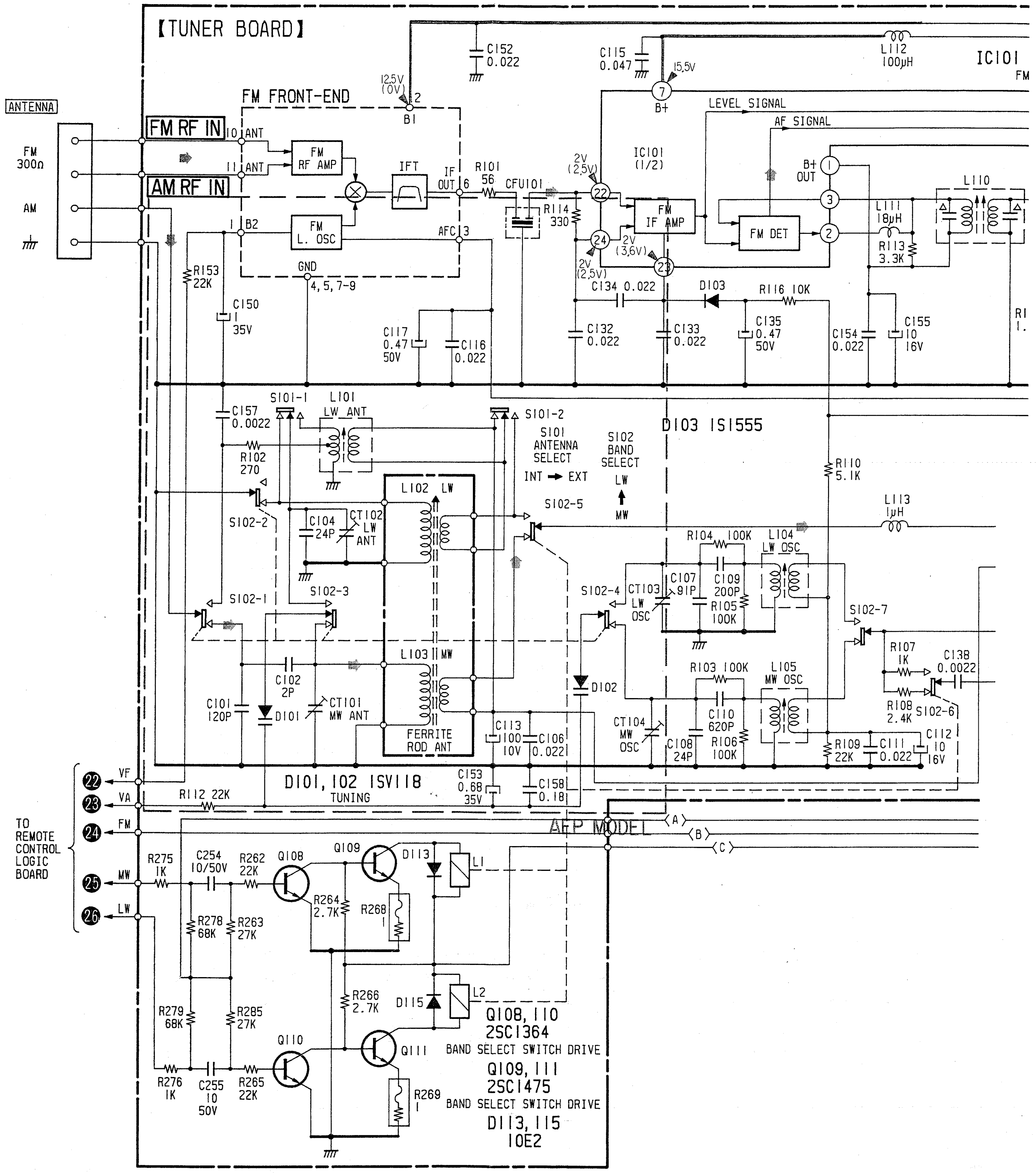

【LED BOARD】
【SWITCH BOARD】
【TRANSMITTER BOARD】
Q,IC
D
CNJ 001
ORG
YEL
GRN
BLU
RED
GRY
WHT
BLK
BRN
D003
D004
D005
D006
IC001
Q001
Q002
Q003
Q004
BATT 1.2V x 3 N180 AAA
V10
RED
OFF
MANUAL
OUT
IN
START
STOP
REC
REC MUTE
AMS PROGRAM
CASSETTE
AMS
MUTING
VOLUME
UP
DOWN
AUX
FM
MW


IC001
S2600
ENCODER
Q001
2SC1815
Q002~004
2SC1959
LED DRIVE
D001
1S1885
D003
SR1050
D004~006
SE303A
RV001 20k
R008 3.3k
3.6V
D002
1S1555
BATT
1.2V x 3 (N180AAA)
C002 100P
RC OSCILLATOR
OSC TEST INPUT
INTERNAL TIMING 40kHz
C001 22 16V
D001
TH001 300Ω
CNJ001
COMMAND
STOP
SIGNAL
GND
VDD
KEYED
ENABLE
OSC
PROGRAMMABLE LOGIC ARRAY
SHIFTING COMPLETED
LATCH
SERIAL INPUT
Q12 THRU Q1
Q0
SHIFT RIGHT
SHIFT REGISTER
LOAD
PARALLEL LOADED INPUT
DATA OUTPUT
R006 3.3k
R007 3.3k
R003 68
R004 100
R001 68 1/2W
R002 68 1/2W
R003 68 1/2W
(END)
(DATA)
PREAMBLE CODE
(SYNC)
SYNC FRAME
START
DATA
MARK
÷2 AND DECODE
COUNT=0
=1 TO 3
=4 TO 7
CK
VALID CODE AT KEY INPUT
CONTROL LOGIC
LATCH
VSS (GND)
LATCH / DEBOUNCE
D003
D004
D005
D006
【TRANSMITTER BOARD】
【LED BOARD】

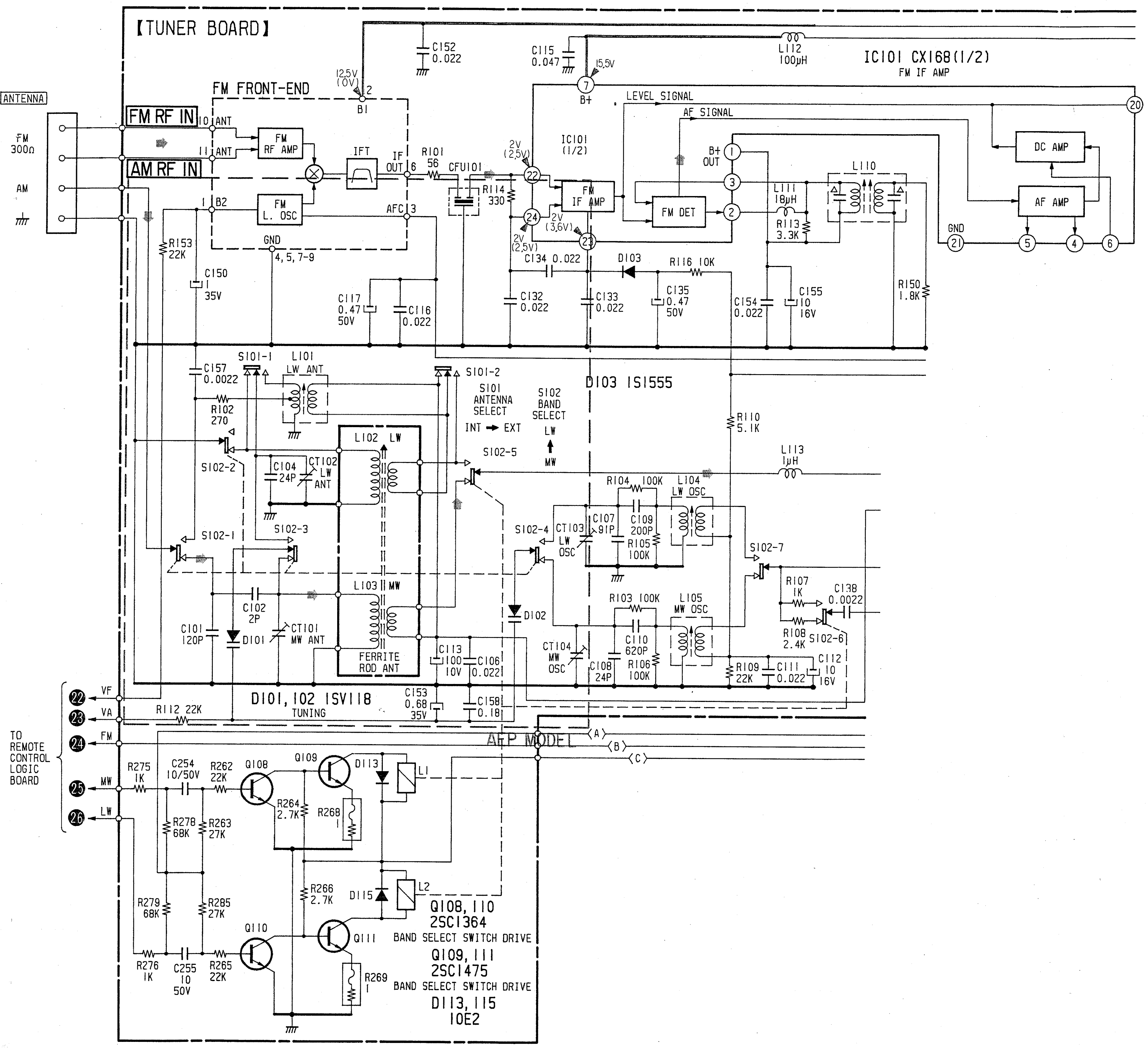

VIO
RV001 20k
BATT 1.2V x 3 N180 AAA
RED
12


【SWITCH BOARD】
OFF
5 FM
4 FM
3 FM
2 FM
1 FM
MANUAL
5 MW
4 MW
3 MW
2 MW
1 MW
OUT
IN
START
STOP
REC
REC MUTE
AMS PROGRAM
CASSETTE
AMS▷
◁AMS
MUTING
VOLUME
UP
DOWN
AUX
1 2 3 4 5 6 7 8 9 10 11 12

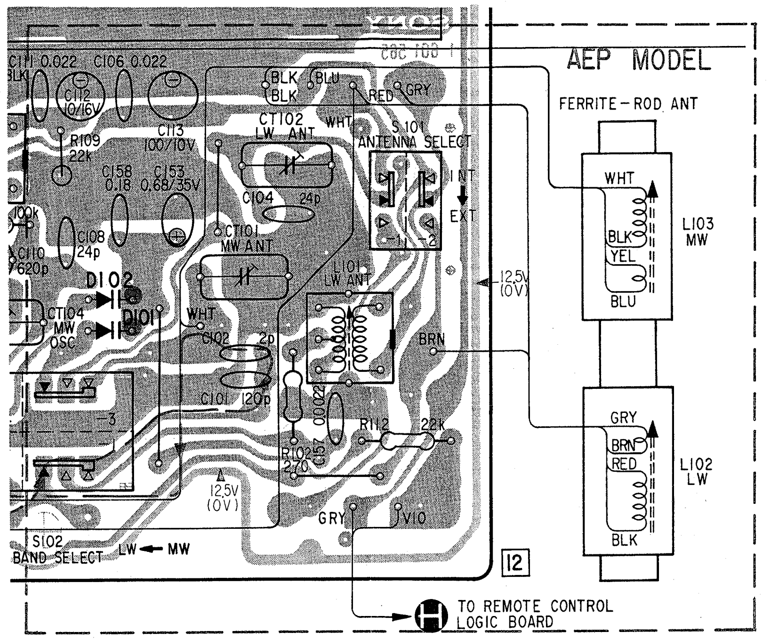
4-5. SCHEMATIC DIAGRAM


【TUNER BOARD】
ANTENNA
FM 300Ω
AM
FM FRONT-END
FM RF IN
AM RF IN
FM RF AMP
IFT
FM L. OSC
IF OUT
AFC
GND 4,5,7-9
CFU101
R101 56
R114 330
IC101 (1/2)
FM IF AMP
FM DET
LEVEL SIGNAL
AF SIGNAL
B+ OUT
L112 100μH
IC101
L110
L111 18μH
R113 3.3K
C152 0.022
C115 0.047
D103
R116 10K
C134 0.022
C132 0.022
C133 0.022
C135 0.47 50V
C154 0.022
C155 10 16V
R153 22K
C150 1 35V
C117 0.47 50V
C116 0.022
C157 0.0022
R102 270
S101-1
L101 LW ANT
S101-2
S101 ANTENNA SELECT INT → EXT
S102 BAND SELECT LW ↑ MW
D103 1S1555
R110 5.1K
L113 1μH
L102 LW
C104 24P
CT102 LW ANT
S102-5
S102-2
S102-1
S102-3
S102-4
CT103 LW OSC
C107 91P
C109 200P
R104 100K
L104 LW OSC
R105 100K
S102-7
R107 1K
C138 0.0022
R108 2.4K
S102-6
L103 MW
C101 120P
C102 2P
D101
CT101 MW ANT
FERRITE ROD ANT
D102
C113 100 10V
C106 0.022
CT104 MW OSC
C108 24P
R103 100K
C110 620P
R106 100K
L105 MW OSC
R109 22K
C111 0.022
C112 1 16V
D101, 102 1SV118 TUNING
C153 0.68 35V
C158 0.18
R112 22K
AEP MODEL
VF
VA
FM
MW
LW
TO REMOTE CONTROL LOGIC BOARD
R275 1K
C254 10/50V
R262 22K
Q108
Q109
D113
L1
R264 2.7K
R268 1
R278 68K
R263 27K
R266 2.7K
D115
L2
R279 68K
R285 27K
Q110
Q111
R276 1K
C255 10 50V
R265 22K
R269 1
Q108, 110 2SC1364 BAND SELECT SWITCH DRIVE
Q109, 111 2SC1475 BAND SELECT SWITCH DRIVE
D113, 115 10E2

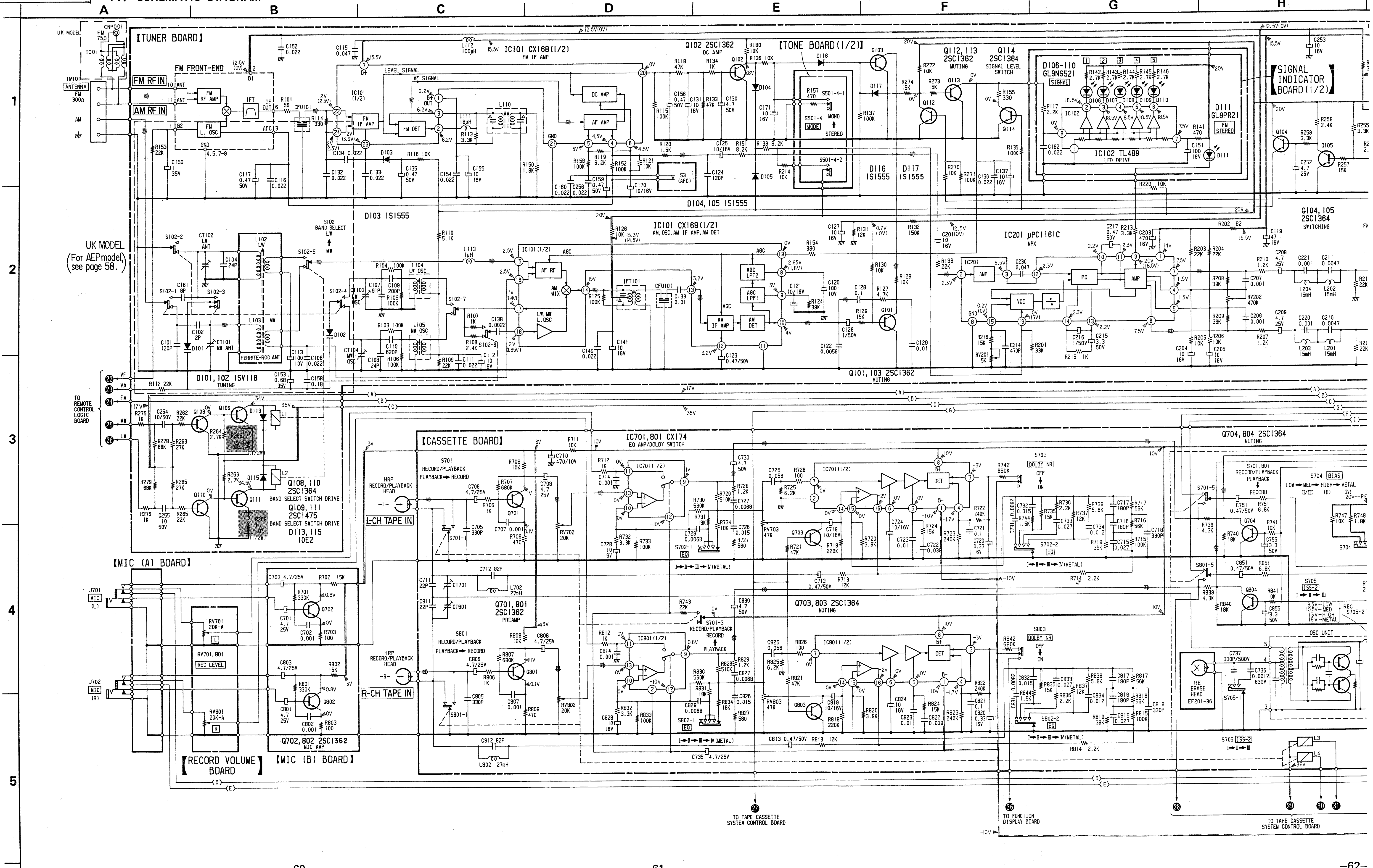
4-5. SCHEMATIC DIAGRAM

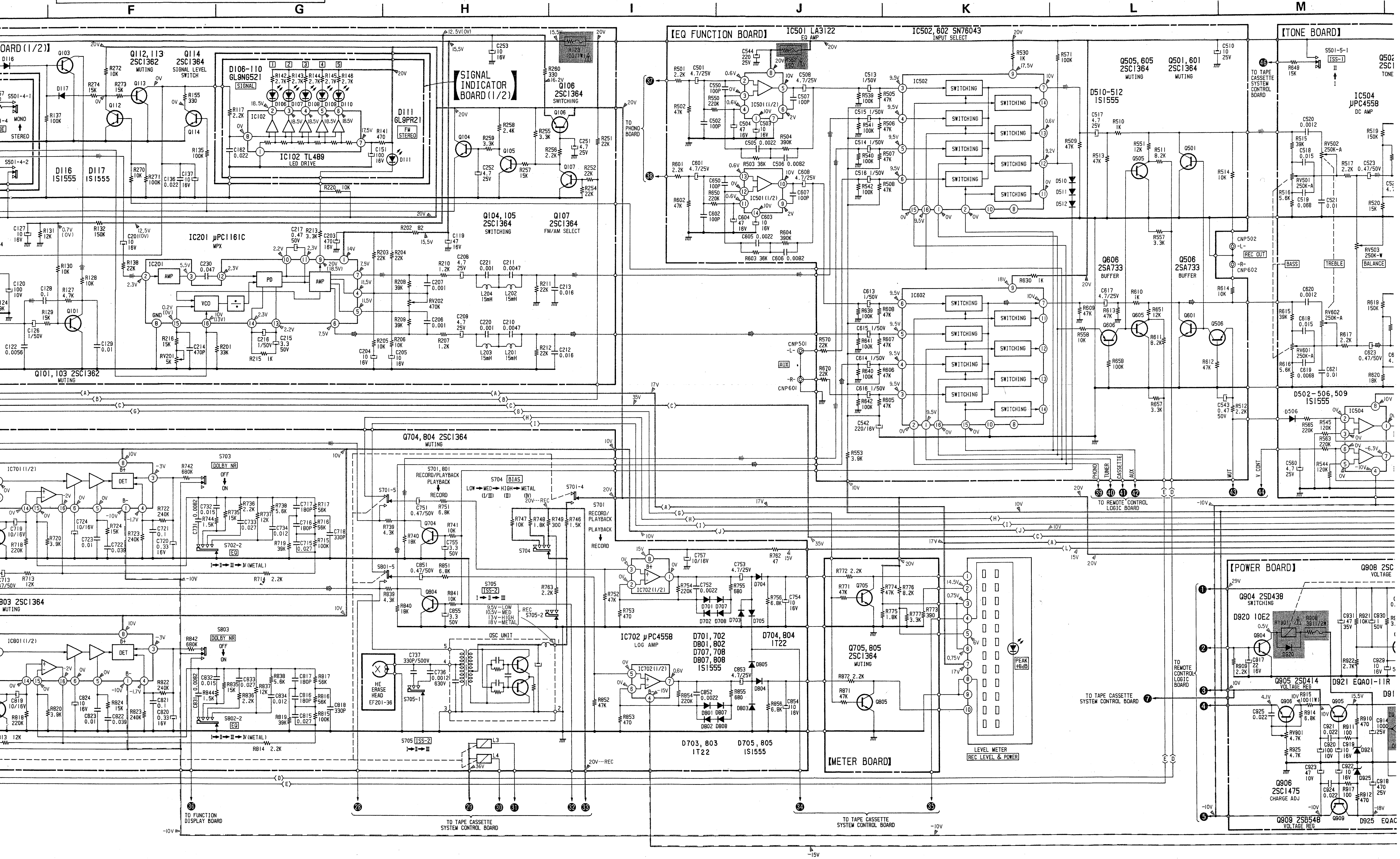

【TUNER BOARD】
ANTENNA
FM 300Ω
AM
FM RF IN
AM RF IN
FM FRONT-END
FM RF AMP
IFT
FM L. OSC
IF OUT
AFC
GND 4, 5, 7-9
CFU101
IC101 (1/2)
FM IF AMP
FM DET
IC101 CX168(1/2) FM IF AMP
LEVEL SIGNAL
AF SIGNAL
DC AMP
AF AMP
L112 100μH
L110
D103
D103 1S1555
S101 ANTENNA SELECT INT → EXT
S102 BAND SELECT LW ↑ MW
L101 LW ANT
L102 LW
L103 MW
FERRITE ROD ANT
L104 LW OSC
L105 MW OSC
D101, 102 1SV118 TUNING
TO REMOTE CONTROL LOGIC BOARD
VF
VA
FM
MW
LW
AEP MODEL
Q108
Q109
Q110
Q111
L1
L2
D113
D115
Q108, 110 2SC1364 BAND SELECT SWITCH DRIVE
Q109, 111 2SC1475 BAND SELECT SWITCH DRIVE
D113, 115 10E2

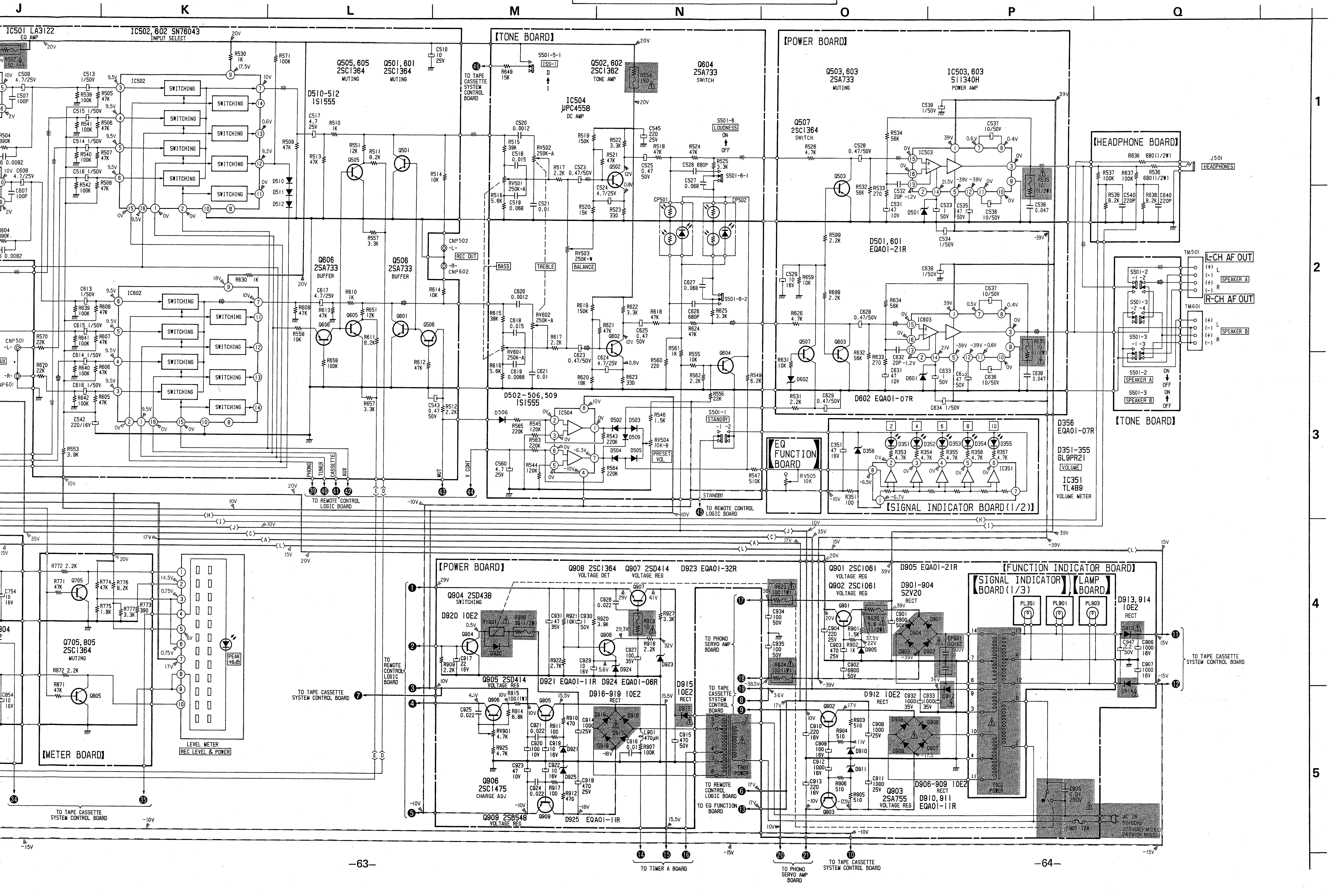
4-6. MOUNTING DIAGRAM


AEP MODEL
FERRITE-ROD ANT
L103 MW
L102 LW
WHT
BLK
YEL
BLU
GRY
BRN
RED
S101 ANTENNA SELECT
INT
EXT
CT102 LW ANT
CT101 MW ANT
CT104 MW OSC
D102
D101
S102 BAND SELECT LW ← MW
12
TO REMOTE CONTROL LOGIC BOARD

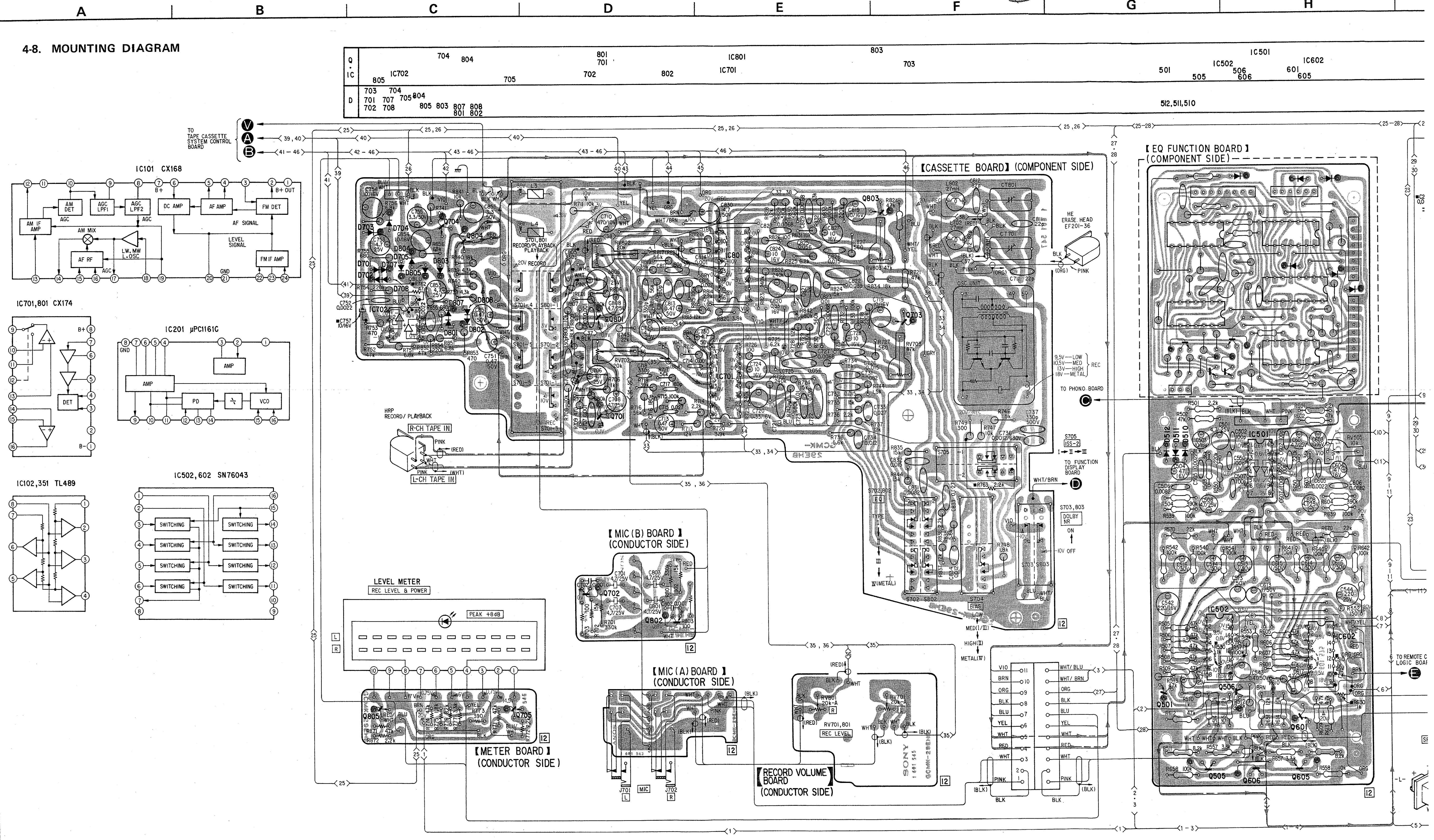
4-7. SCHEMATIC DIAGRAM

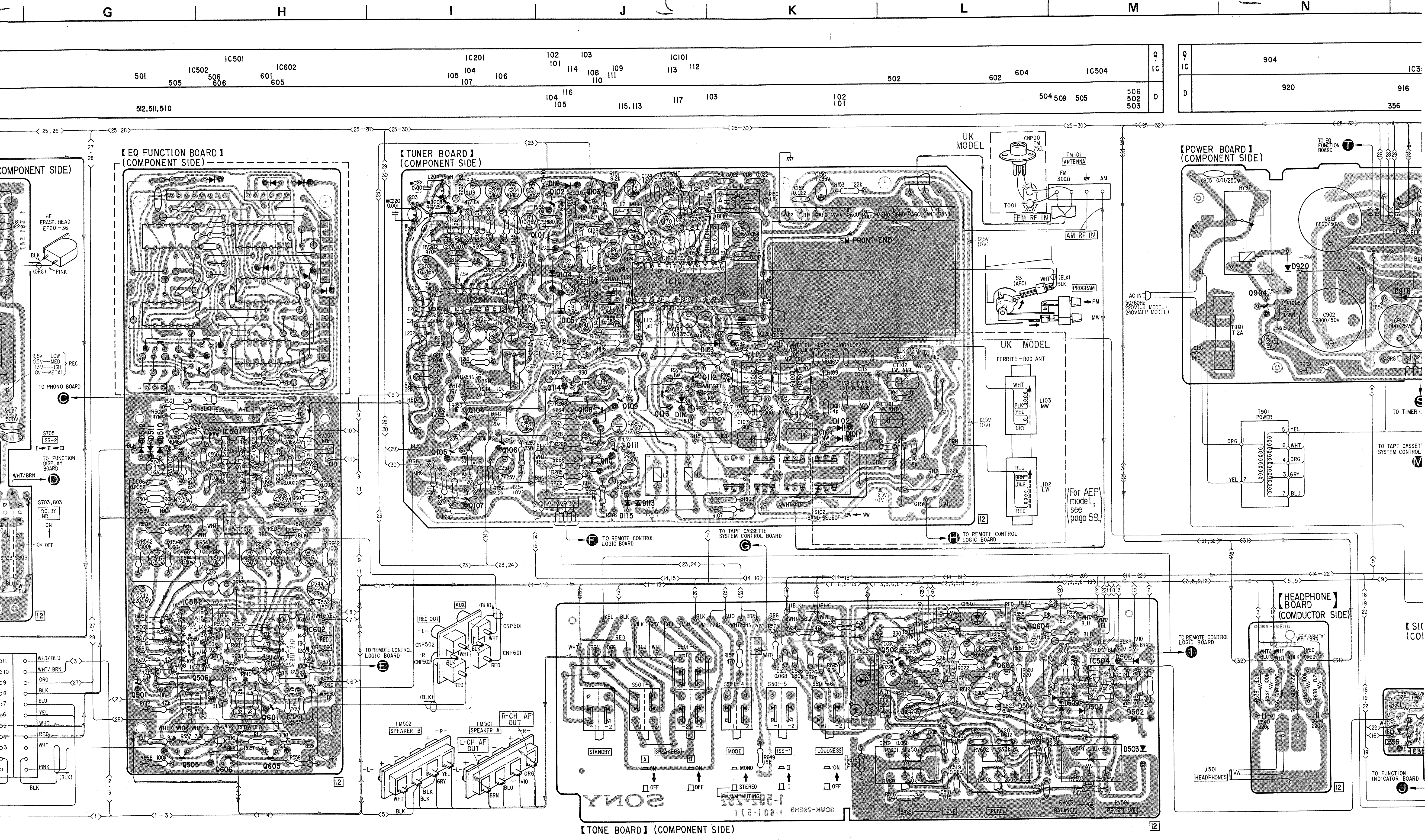

A
B
C
D
E
F
G
H
1
2
3
4
5
[TUNER BOARD]
UK MODEL
CNP001
FM 75Ω
T001
TM101 ANTENNA FM 300Ω
AM
FM RF IN
AM RF IN
FM FRONT-END
FM RF AMP
IFT
FM L. OSC
CFU101
IC101 CX168(1/2) FM IF AMP
LEVEL SIGNAL
AF SIGNAL
FM IF AMP
FM DET
DC AMP
AF AMP
S3 (AFC)
Q102 2SC1362 DC AMP
[TONE BOARD(1/2)]
S501-4-1
S501-4 MONO STEREO
S501-4-2
D116 1S1555
D117 1S1555
D104,105 1S1555
D103 1S1555
Q112,113 2SC1362 MUTING
Q114 2SC1364 SIGNAL LEVEL SWITCH
D106-110 GL9NG521 SIGNAL
IC102 TL489 LED DRIVE
D111 GL9PR21 FM STEREO
[SIGNAL INDICATOR BOARD(1/2)]
Q104,105 2SC1364 SWITCHING
UK MODEL (For AEP model, see page 58.)
S102-2 CT102 LW ANT
L102 LW
S102-5
S102 BAND SELECT LW ↑ MW
L103 MW
FERRITE-ROD ANT
CT101 MW ANT
L104 LW OSC
L105 MW OSC
S102-7
IC101 CX168(1/2) AM, OSC, AM IF AMP, AM DET
AF RF
AM MIX
LW, MW L. OSC
IFT101
CFU101
AGC LPF2
AGC LPF1
AM IF AMP
AM DET
IC201 μPC1161C MPX
AMP
PD
VCO
Q101,103 2SC1362 MUTING
D101,102 1SV118 TUNING
TO REMOTE CONTROL LOGIC BOARD
VF
VA
FM
MW
LW
Q108,110 2SC1364 BAND SELECT SWITCH DRIVE
Q109,111 2SC1475 BAND SELECT SWITCH DRIVE
D113,115 10E2
[MIC (A) BOARD]
J701 MIC (L)
J702 MIC (R)
RV701 20K-A
RV701,801 REC LEVEL
RV801 20K-A
[RECORD VOLUME BOARD]
Q702,802 2SC1362 MIC AMP
[MIC (B) BOARD]
[CASSETTE BOARD]
S701 RECORD/PLAYBACK PLAYBACK → RECORD
HRP RECORD/PLAYBACK HEAD
L-CH TAPE IN
Q701,801 2SC1362 PREAMP
S801 RECORD/PLAYBACK PLAYBACK → RECORD
R-CH TAPE IN
IC701,801 CX174 EQ AMP/DOLBY SWITCH
IC701(1/2)
IC801(1/2)
DET
S701-3 RECORD/PLAYBACK RECORD ↓ PLAYBACK
S702-1 EQ
S802-1 EQ
I → II → III → IV (METAL)
Q703,803 2SC1364 MUTING
S703 DOLBY NR OFF ↓ ON
S803 DOLBY NR OFF ↓ ON
S702-2
S802-2
Q704,804 2SC1364 MUTING
S701,801 RECORD/PLAYBACK PLAYBACK ↓ RECORD
S704 BIAS LOW → MED → HIGH → METAL
S705 ISS-2 I → II → III
9.5V—LOW 10.5V—MED 13V—HIGH 18V—METAL
REC S705-2
OSC UNIT
HE ERASE HEAD EF201-36
S705-1
L3
L4
TO TAPE CASSETTE SYSTEM CONTROL BOARD
TO FUNCTION DISPLAY BOARD
TO TAPE CASSETTE SYSTEM CONTROL BOARD

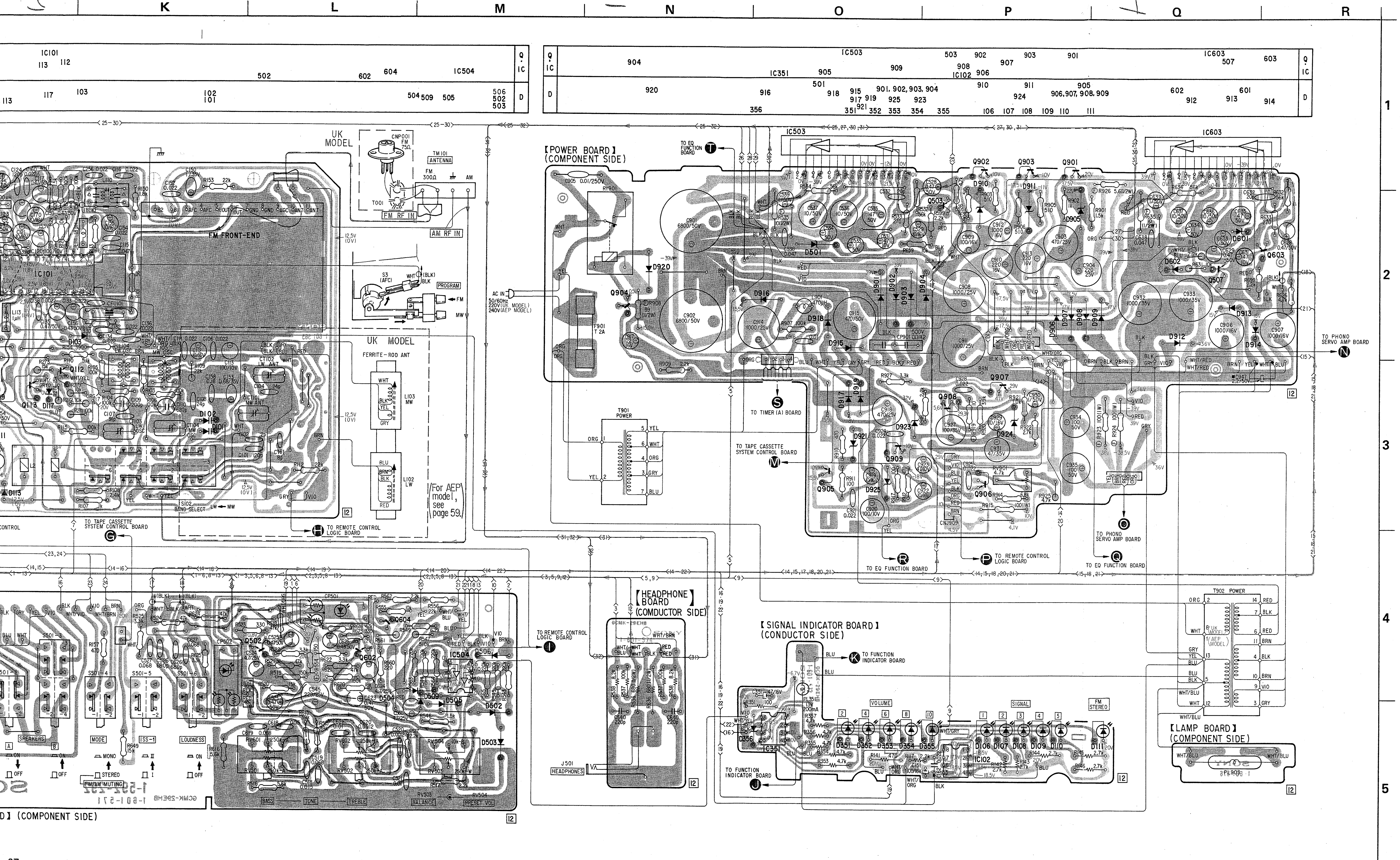

F
G
H
I
J
K
L
M
OARD (1/2)]
Q103
Q112, 113 2SC1362 MUTING
Q114 2SC1364 SIGNAL LEVEL SWITCH
D106-110 GL9NG521
SIGNAL
IC102 TL489 LED DRIVE
D111 GL9PR21
FM STEREO
[SIGNAL INDICATOR BOARD (1/2)]
Q106 2SC1364 SWITCHING
D116 1S1555
D117 1S1555
Q104, 105 2SC1364 SWITCHING
Q107 2SC1364 FM/AM SELECT
IC201 μPC1161C MPX
VCO
PD
AMP
Q101, 103 2SC1362 MUTING
[EQ FUNCTION BOARD]
IC501 LA3122 EQ AMP
IC502, 602 SN76043 INPUT SELECT
SWITCHING
TO PHONO BOARD
Q505, 605 2SC1364 MUTING
Q501, 601 2SC1364 MUTING
D510-512 1S1555
Q606 2SA733 BUFFER
Q506 2SA733 BUFFER
REC OUT
CNP502
CNP602
CNP501
CNP601
AUX
[TONE BOARD]
TO TAPE CASSETTE SYSTEM CONTROL BOARD
IC504 μPC4558 DC AMP
BASS
TREBLE
BALANCE
D502-506, 509 1S1555
PHONO
TUNER
CASSETTE
AUX
MUT
V CONT
TO REMOTE CONTROL LOGIC BOARD
Q704, 804 2SC1364 MUTING
IC701 (1/2)
DET
S703 DOLBY NR OFF ON
S701, 801 RECORD/PLAYBACK
S704 BIAS LOW→MED→HIGH→METAL
S701 RECORD/PLAYBACK
S702-2 EQ
I→II→III→IV (METAL)
03 2SC1364 MUTING
IC801 (1/2)
S803 DOLBY NR OFF ON
S802-2 EQ
S705 ISS-2 I→II→III
9.5V—LOW 10.5V—MED 13V—HIGH 18V—METAL
OSC UNIT
HE ERASE HEAD EF201-36
IC702 μPC4558 LOG AMP
D701, 702 D801, 802 D707, 708 D807, 808 1S1555
D704, 804 1T22
D703, 803 1T22
D705, 805 1S1555
Q705, 805 2SC1364 MUTING
[METER BOARD]
LEVEL METER REC LEVEL & POWER
PEAK +6dB
TO FUNCTION DISPLAY BOARD
TO TAPE CASSETTE SYSTEM CONTROL BOARD
TO TAPE CASSETTE SYSTEM CONTROL BOARD
[POWER BOARD]
Q908 2SC VOLTAGE
Q904 2SD438 SWITCHING
D920 10E2
TO REMOTE CONTROL LOGIC BOARD
TO TAPE CASSETTE SYSTEM CONTROL BOARD
Q905 2SD414 VOLTAGE REG
D921 EQA01-11R
Q906 2SC1475 CHARGE ADJ
Q909 2SB548 VOLTAGE REG
D925 EQAC


J
K
L
M
N
O
P
Q
1
2
3
4
5
IC501 LA3122 EQ AMP
IC502, 602 SN76043 INPUT SELECT
SWITCHING
Q505, 605 2SC1364 MUTING
Q501, 601 2SC1364 MUTING
D510-512 1S1555
Q606 2SA733 BUFFER
Q506 2SA733 BUFFER
CNP502
REC OUT
CNP602
CNP501
AUX
[TONE BOARD]
TO TAPE CASSETTE SYSTEM CONTROL BOARD
S501-5-1
ISS-1
Q502, 602 2SC1362 TONE AMP
Q604 2SA733 SWITCH
IC504 μPC4558 DC AMP
S501-6 LOUDNESS ON OFF
S501-6-1
S501-6-2
RV501 250K-A
RV502 250K-A
RV503 250K-W BALANCE
BASS
TREBLE
CP501
CP502
D502-506, 509 1S1555
RV504 10K-B PRESET VOL
S501-1 STANDBY
PHONO
TUNER
CASSETTE
AUX
MUT
V CONT
TO REMOTE CONTROL LOGIC BOARD
STANDBY
[POWER BOARD]
Q503, 603 2SA733 MUTING
IC503, 603 SI1340H POWER AMP
Q507 2SC1364 SWITCH
D501, 601 EQA01-21R
D602 EQA01-07R
[HEADPHONE BOARD]
J501 HEADPHONES
TM501
L-CH AF OUT
SPEAKER A
R-CH AF OUT
TM601
SPEAKER B
S501-2
S501-3
ON OFF
[TONE BOARD]
EQ FUNCTION BOARD
RV505 10K
[SIGNAL INDICATOR BOARD (1/2)]
IC351
D356 EQA01-07R
D351-355 GL9PR21
VOLUME
IC351 TL489 VOLUME METER
Q705, 805 2SC1364 MUTING
[METER BOARD]
LEVEL METER
REC LEVEL & POWER
PEAK +8dB
TO TAPE CASSETTE SYSTEM CONTROL BOARD
[POWER BOARD]
Q908 2SC1364 VOLTAGE DET
Q907 2SD414 VOLTAGE REG
D923 EQA01-32R
Q904 2SD438 SWITCHING
D920 10E2
TO REMOTE CONTROL LOGIC BOARD
Q905 2SD414 VOLTAGE REG
D921 EQA01-11R
D924 EQA01-06R
D916-919 10E2 RECT
D915 10E2 RECT
L901 470μH
Q906 2SC1475 CHARGE ADJ
Q909 2SB548 VOLTAGE REG
D925 EQA01-11R
TO PHONO SERVO AMP BOARD
TO TAPE CASSETTE SYSTEM CONTROL LOGIC BOARD
T901 POWER
TO REMOTE CONTROL BOARD
TO EQ FUNCTION BOARD
TO TIMER A BOARD
Q901 2SC1061 VOLTAGE REG
Q902 2SC1061 VOLTAGE REG
D905 EQA01-21R
D901-904 S2V20 RECT
D912 10E2 RECT
Q903 2SA755 VOLTAGE REG
D906-909 10E2 RECT
D910, 911 EQA01-11R
[FUNCTION INDICATOR BOARD]
[SIGNAL INDICATOR BOARD (1/3)]
[LAMP BOARD]
PL351
PL901
PL903
D913, 914 10E2 RECT
T902 POWER
F901 T2A
AC IN 50/60Hz 220V (AEP MODEL) 240V (UK MODEL)
TO TAPE CASSETTE SYSTEM CONTROL BOARD
TO PHONO SERVO AMP BOARD

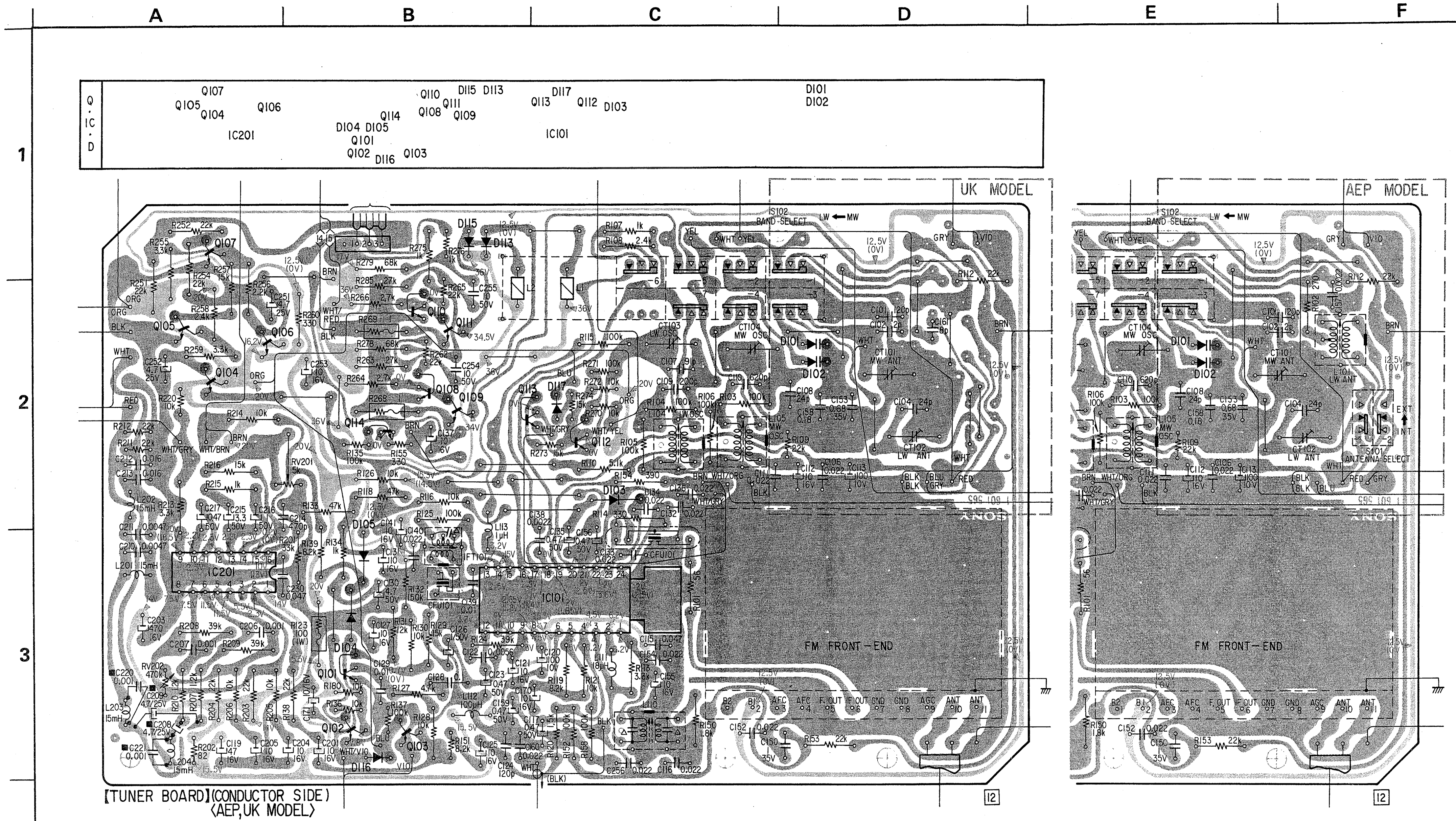
4-8. MOUNTING DIAGRAM


A
B
C
D
E
F
G
H
1
2
3
4
5
Q
IC
D
IC101 CX168
AM IF AMP
AM DET
AGC LPF1
AGC LPF2
DC AMP
AF AMP
FM DET
AM MIX
AF RF
L.W, MW L.OSC
FM IF AMP
AF SIGNAL
LEVEL SIGNAL
B+
B+ OUT
GND
IC701,801 CX174
DET
B+
B-
IC201 μPC1161C
AMP
PD
VCO
GND
IC102,351 TL489
IC502,602 SN76043
SWITCHING
TO TAPE CASSETTE SYSTEM CONTROL BOARD
【CASSETTE BOARD】(COMPONENT SIDE)
【EQ FUNCTION BOARD】(COMPONENT SIDE)
HE ERASE HEAD EF201-36
HRP RECORD/ PLAYBACK
R-CH TAPE IN
L-CH TAPE IN
OSC UNIT
9.5V—LOW
10.5V—MED
13V—HIGH
18V—METAL
REC
TO PHONO BOARD
S705 ISS-2
TO FUNCTION DISPLAY BOARD
S703, 803 DOLBY NR
ON
OFF
S702, S802 EQ TYPE
S704 BIAS
LOW
MED(I/III)
HIGH(II)
METAL(IV)
S701, 801 RECORD/PLAYBACK
RECORD
PLAYBACK
【MIC (B) BOARD】(CONDUCTOR SIDE)
【MIC (A) BOARD】(CONDUCTOR SIDE)
J701 MIC J702
L
R
LEVEL METER
REC LEVEL & POWER
PEAK +6dB
【METER BOARD】(CONDUCTOR SIDE)
【RECORD VOLUME BOARD】(CONDUCTOR SIDE)
RV701, 801 REC LEVEL
TO REMOTE C LOGIC BOAR
IC501
IC502
IC602
IC701
IC801
IC702
Q501
Q505
Q506
Q601
Q605
Q606
Q701
Q702
Q703
Q704
Q801
Q802
Q803
Q804
Q805
Q705
12

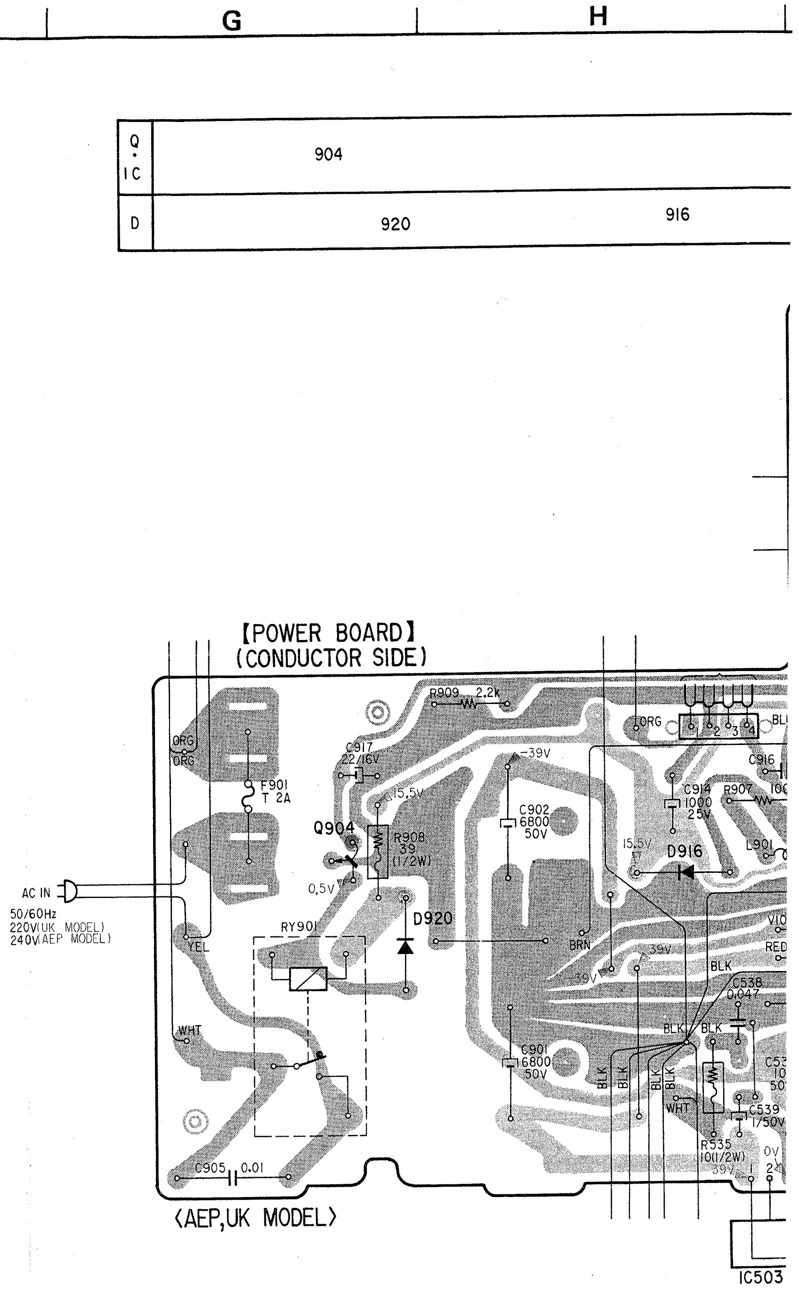

G
H
I
J
K
L
M
N
Q·IC
D
IC501
IC502
IC602
IC201
IC101
IC504
904
920
916
356
【EQ FUNCTION BOARD】
(COMPONENT SIDE)
【TUNER BOARD】
(COMPONENT SIDE)
FM FRONT-END
UK MODEL
CNP001 FM 75Ω
TM101 ANTENNA
FM 300Ω
AM
T001
FM RF IN
AM RF IN
S3 (AFC)
PROGRAM
FM
MW
UK MODEL
FERRITE-ROD ANT
L103 MW
L102 LW
(For AEP model, see page 59.)
S102 BAND SELECT LW — MW
TO REMOTE CONTROL LOGIC BOARD
TO TAPE CASSETTE SYSTEM CONTROL BOARD
TO REMOTE CONTROL LOGIC BOARD
【POWER BOARD】
(COMPONENT SIDE)
TO EQ FUNCTION BOARD
AC IN 50/60Hz 220V(UK MODEL) 240V(AEP MODEL)
F901 T 2A
RY901
C901 6800/50V
C902 6800/50V
C914 1000/25V
D920
Q904
D916
T901 POWER
TO TIMER
TO TAPE CASSETTE SYSTEM CONTROL
HE ERASE HEAD EF201-36
COMPONENT SIDE)
9.5V — LOW
10.5V — MED
13V — HIGH
16V — METAL
REC
TO PHONO BOARD
S705 1SS-2
TO FUNCTION DISPLAY BOARD
S703, 803 DOLBY NR
ON
OFF
TO REMOTE CONTROL LOGIC BOARD
REC OUT
AUX
CNP501
CNP502
CNP601
CNP602
TM502 SPEAKER B
TM501 SPEAKER A
R-CH AF OUT
L-CH AF OUT
【TONE BOARD】 (COMPONENT SIDE)
STANDBY
SPEAKERS
MODE
1SS-1
LOUDNESS
ON
OFF
MONO
STEREO
FM/AM MUTING
BASS
TONE
TREBLE
BALANCE
PRESET VOL
SONY
1-601-571
TO REMOTE CONTROL LOGIC BOARD
【HEADPHONE BOARD】
(CONDUCTOR SIDE)
J501 HEADPHONES
TO FUNCTION INDICATOR BOARD
【SIG
(CO


K
L
M
N
O
P
Q
R
1
2
3
4
5
UK MODEL
CNP001 FM 75Ω
TM101 ANTENNA
FM 300Ω
AM
T001
FM RF IN
AM RF IN
FM FRONT-END
IC101
S3 (AFC)
PROGRAM
UK MODEL
FERRITE-ROD ANT
L103 MW
L102 LW
(For AEP model, see page 59.)
S102 BAND SELECT
TO TAPE CASSETTE SYSTEM CONTROL BOARD
TO REMOTE CONTROL LOGIC BOARD
【POWER BOARD】 (COMPONENT SIDE)
TO EQ FUNCTION BOARD
RY901
AC IN 50/60Hz 220V (UK MODEL) 240V (AEP MODEL)
F901 T 2A
T901 POWER
TO TIMER (A) BOARD
TO TAPE CASSETTE SYSTEM CONTROL BOARD
IC503
IC603
TO PHONO SERVO AMP BOARD
TO EQ FUNCTION BOARD
TO REMOTE CONTROL LOGIC BOARD
TO EQ FUNCTION BOARD
TO PHONO SERVO AMP BOARD
TO EQ FUNCTION BOARD
【HEADPHONE BOARD】 (CONDUCTOR SIDE)
J501 HEADPHONES
TO REMOTE CONTROL LOGIC BOARD
【SIGNAL INDICATOR BOARD】 (CONDUCTOR SIDE)
TO FUNCTION INDICATOR BOARD
TO FUNCTION INDICATOR BOARD
VOLUME
SIGNAL
FM STEREO
IC102
T902 POWER
UK MODEL
AEP MODEL
【LAMP BOARD】 (COMPONENT SIDE)
PL903
SPEAKERS
MODE
ISS-1
LOUDNESS
MONO
STEREO
FM/AM MUTING
OFF
ON
IC504
RV501
RV502
RV503
RV504
BASS
TONE
TREBLE
BALANCE
PRESET VOL
D】 (COMPONENT SIDE)
CONTROL

4-9. MOUNTING DIAGRAMS


A
B
C
D
E
F
1
2
3
4
5
Q·IC·D
Q107 Q105 Q104 Q106 IC201
Q110 D115 D113 Q111 Q108 Q109 Q114 D104 D105 Q101 Q102 D116 Q103
D117 Q113 Q112 D103 IC101
D101 D102
UK MODEL
AEP MODEL
S102 BAND SELECT
LW ← MW
S101 ANTENNA SELECT
EXT INT
CT104 MW OSC
CT103 LW OSC
CT101 MW ANT
CT102 LW ANT
FM FRONT-END
IC101
IC201
12

【TUNER BOARD】(CONDUCTOR SIDE)
〈AEP,UK MODEL〉

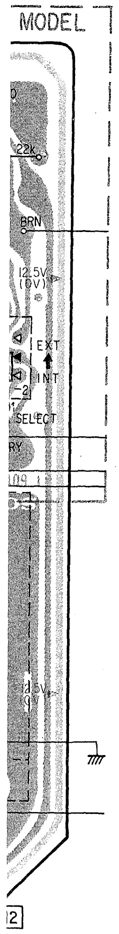

G
H
Q·IC
D
904
920
916
AC IN
50/60Hz
220V(UK MODEL)
240V(AEP MODEL)
F901 T 2A
Q904
D916
D920
RY901
IC503

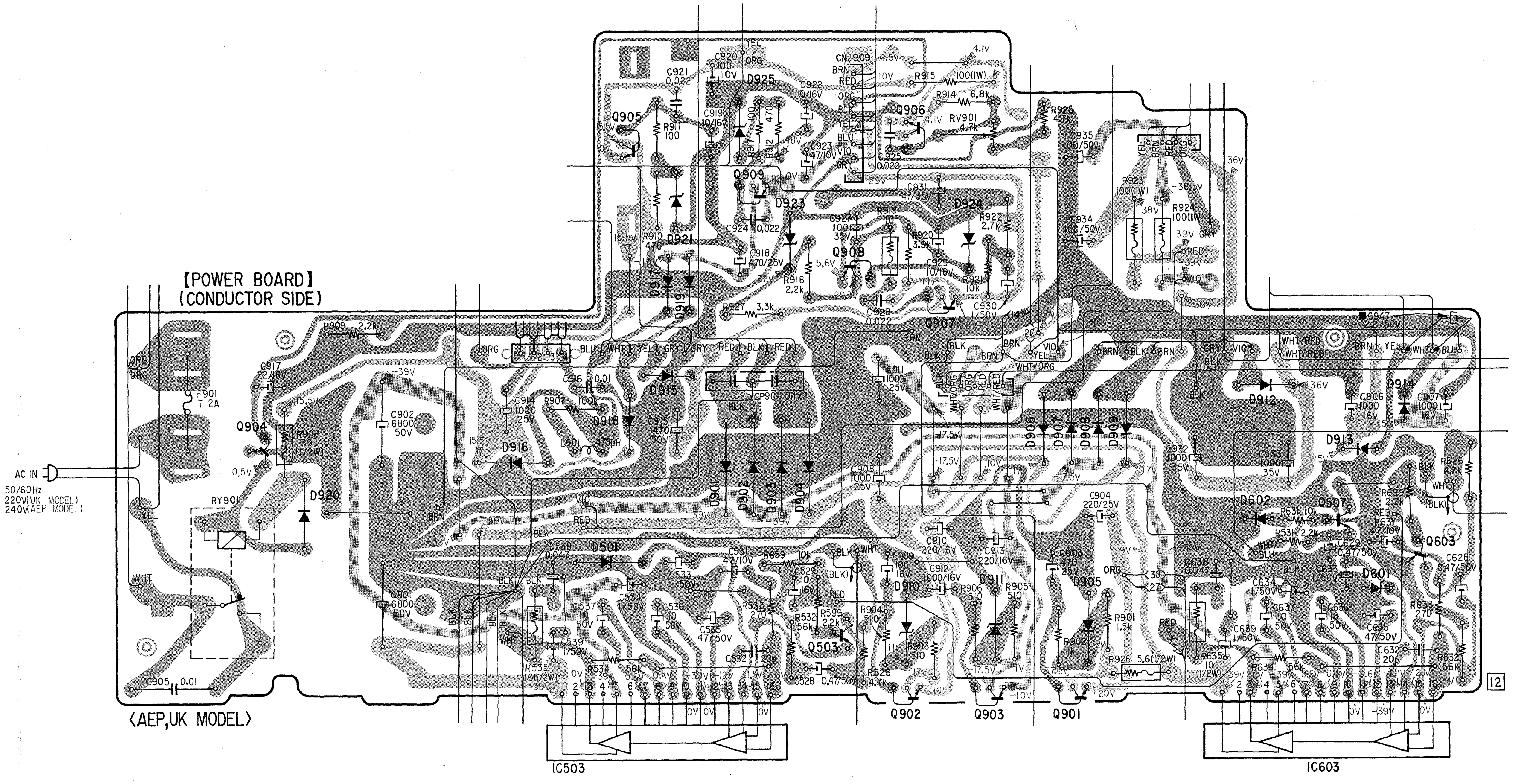
【POWER BOARD】(CONDUCTOR SIDE)

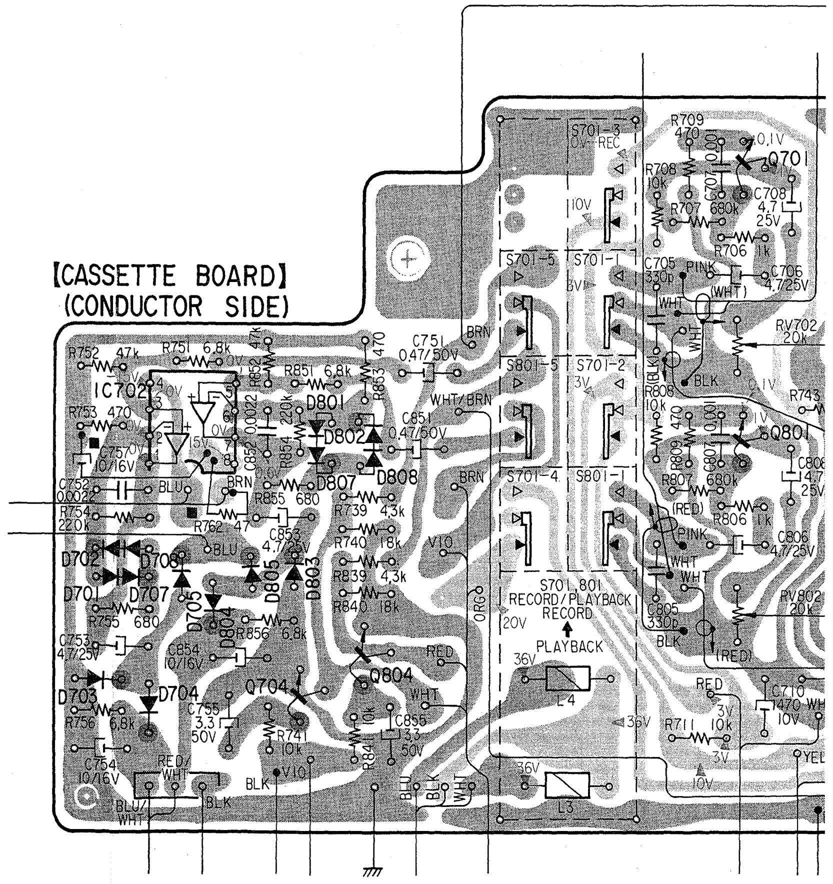
〈AEP,UK MODEL〉

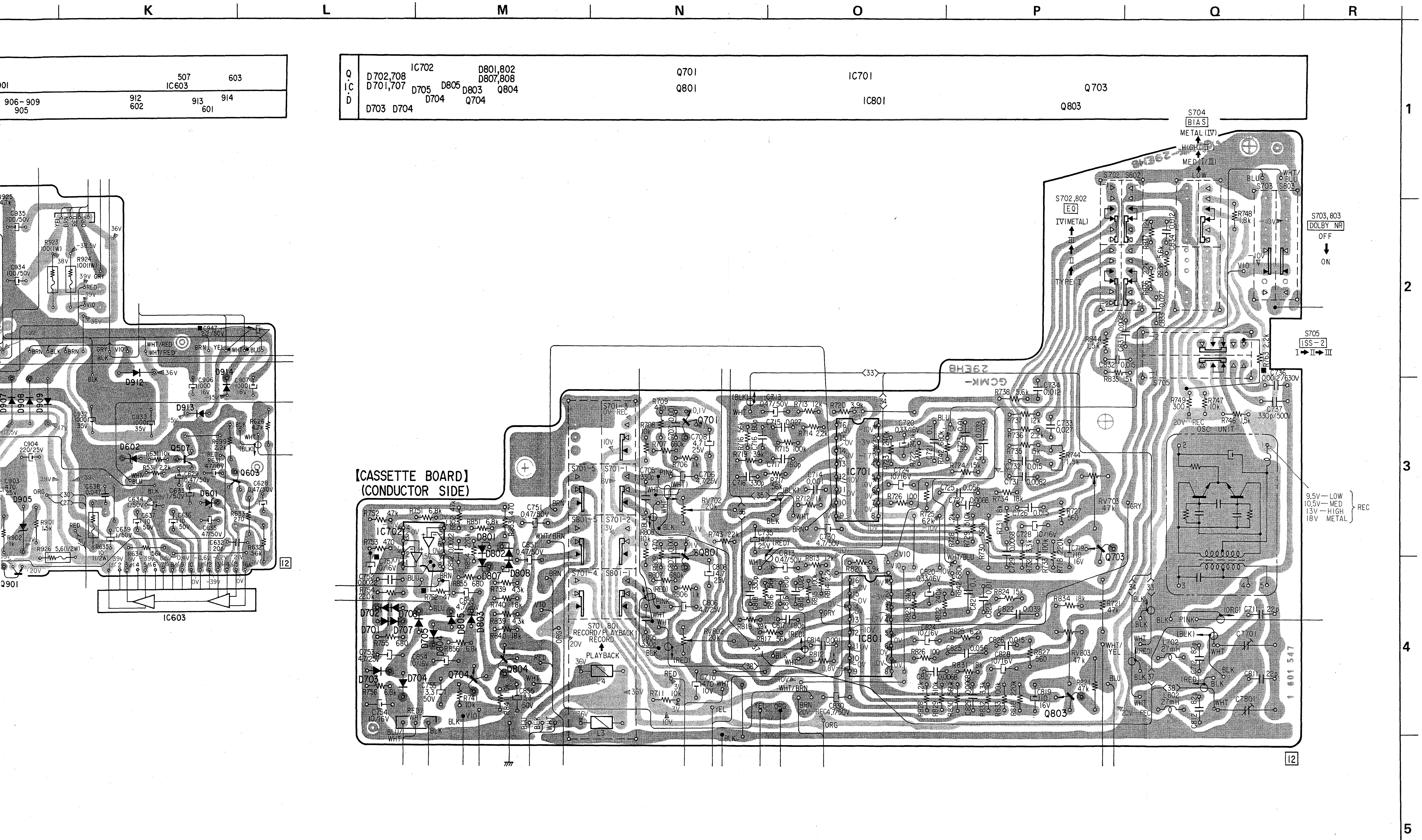
	G	H	I	J	K
Q·IC	904		905 909 908 503 IC503	906 907 902 903 901	507 IC603 603
D	920	916	501 918 921 917 919 915 925 901–904 923	910 924 911 906–909 905	912 602 913 601 914

	M	N
Q·IC	IC702 D702,708 D701,707 D705 D805 D801,802 D807,808 D803 Q804 D704 Q704	Q701 Q801
D	D703 D704	


MODEL
EXT
INT
SELECT


【POWER BOARD】
(CONDUCTOR SIDE)
〈AEP,UK MODEL〉
AC IN
50/60Hz
220V(UK MODEL)
240V(AEP MODEL)
F901 T 2A
RY901
IC503
IC603
Q901
Q902
Q903
Q904
Q905
Q906
Q907
Q908
Q909
Q503
Q507
Q603
D501
D601
D602
D901
D902
D903
D904
D905
D906
D907
D908
D909
D910
D911
D912
D913
D914
D915
D916
D917
D918
D919
D920
D921
D923
D924
D925
CNJ909


【CASSETTE BOARD】
(CONDUCTOR SIDE)
IC702
Q701
Q801
Q704
Q804
S701,801
RECORD/PLAYBACK
RECORD
PLAYBACK
L3
L4

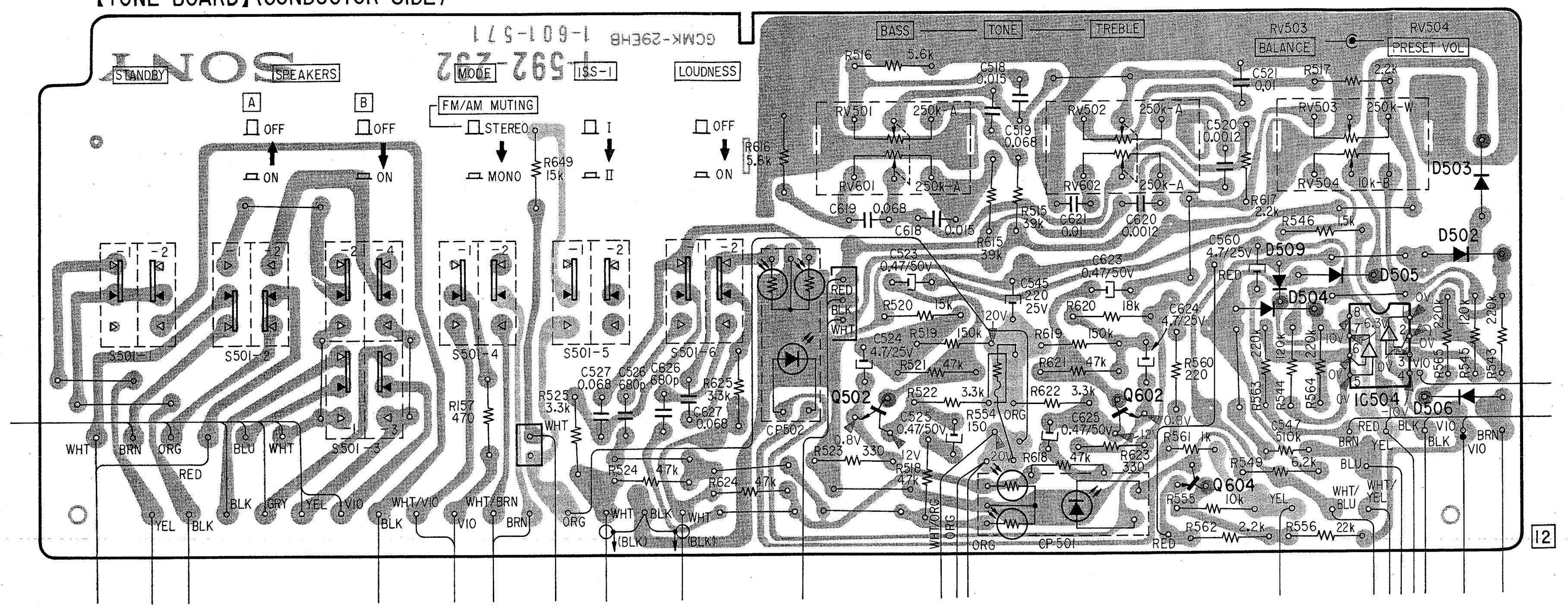

K
L
M
N
O
P
Q
R
1
2
3
4
5
Q
IC
D
901
906-909
905
507
IC603
603
912
602
913
601
914
D702,708
D701,707
IC702
D705
D805
D704
D703 D704
D801,802
D807,808
D803
Q804
Q704
Q701
Q801
IC701
IC801
Q703
Q803
【CASSETTE BOARD】
(CONDUCTOR SIDE)
IC603
S704
BIAS
METAL (IV)
HIGH (II)
MED (I/III)
LOW
S702,802
EQ
IV(METAL)
III
II
TYPE I
S703,803
DOLBY NR
OFF
ON
S705
ISS-2
I→II→III
OSC UNIT
9.5V—LOW
10.5V—MED
13V—HIGH
18V METAL
REC
S701,801
RECORD/PLAYBACK
RECORD
PLAYBACK
L3
L4
L702 27mH
L802 27mH
GCMK-29EHB
1-601-547
12

A B C D E F G H

4-10. MOUNTING DIAGRAMS

Q·IC·D: Q502 Q602 Q604 D504 D509, D505 IC504 D503 D502 D506

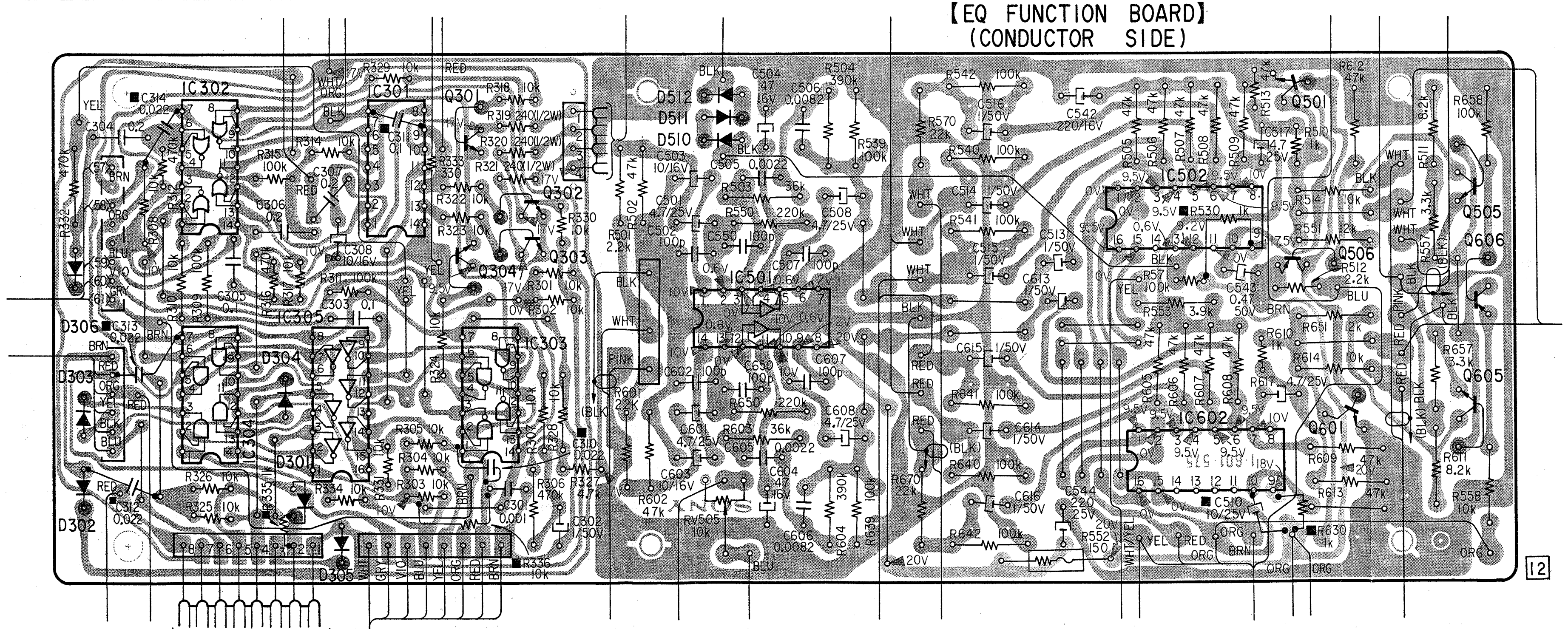
【TONE BOARD】(CONDUCTOR SIDE)


SONY
1-592-262
1-601-571
GCMK-29EHB
STANDBY
SPEAKERS
A
B
OFF
ON
MODE
FM/AM MUTING
STEREO
MONO
ISS-I
I
II
LOUDNESS
S501-1
S501-2
S501-3
S501-4
S501-5
S501-6
BASS
TONE
TREBLE
BALANCE
PRESET VOL
RV501
RV502
RV503
RV504
RV601
RV602
Q502
Q602
Q604
IC504
D502
D503
D504
D505
D506
D509
CP501
CP502
12

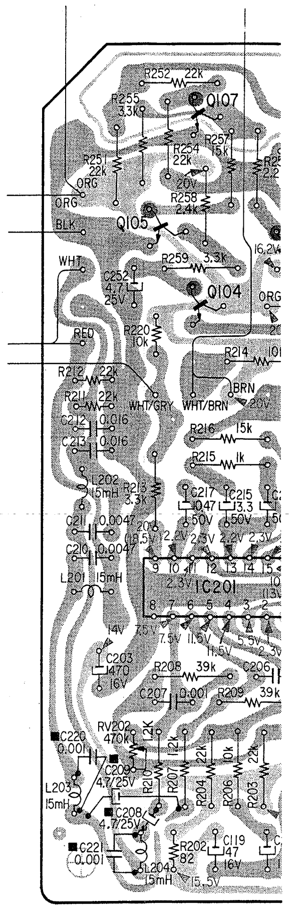
Q·IC: IC302 IC304 IC301 IC305 301 304 302 303 IC303 IC501 IC502 IC602 501 506 601 505 606 605

D: 306 303 302 304 301 305 512 511 510

【EQ FUNCTION BOARD】
(CONDUCTOR SIDE)


IC301
IC302
IC303
IC304
IC305
IC501
IC502
IC602
Q301
Q302
Q303
Q304
Q501
Q505
Q506
Q601
Q605
Q606
D301
D302
D303
D304
D305
D306
D510
D511
D512
RV505
12

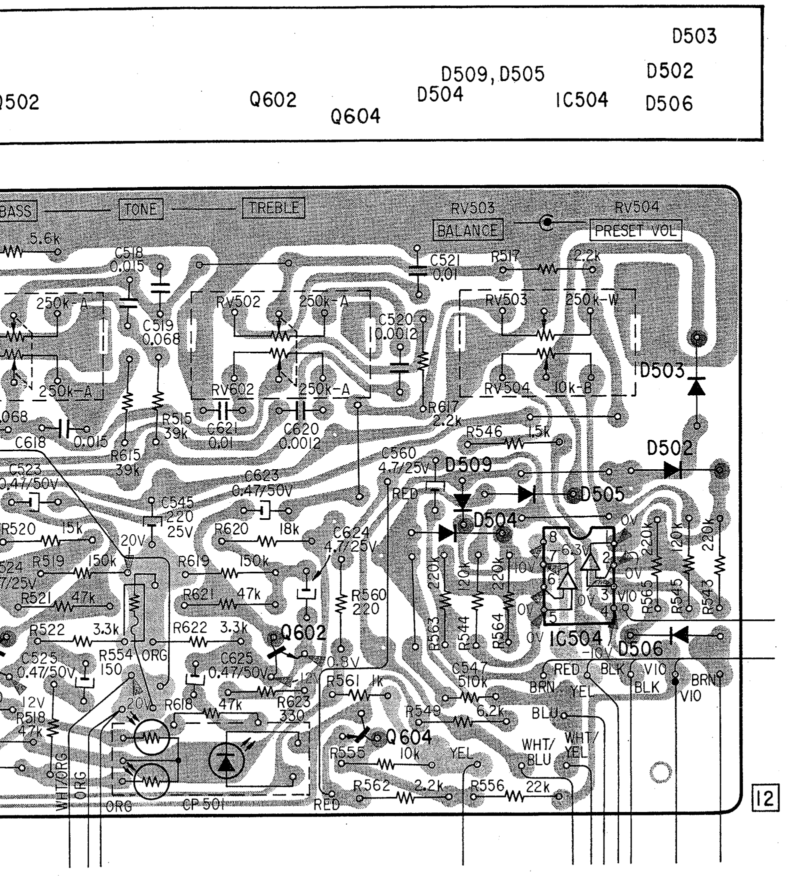
Q·IC·D: Q107 Q105 Q104 IC201 Q

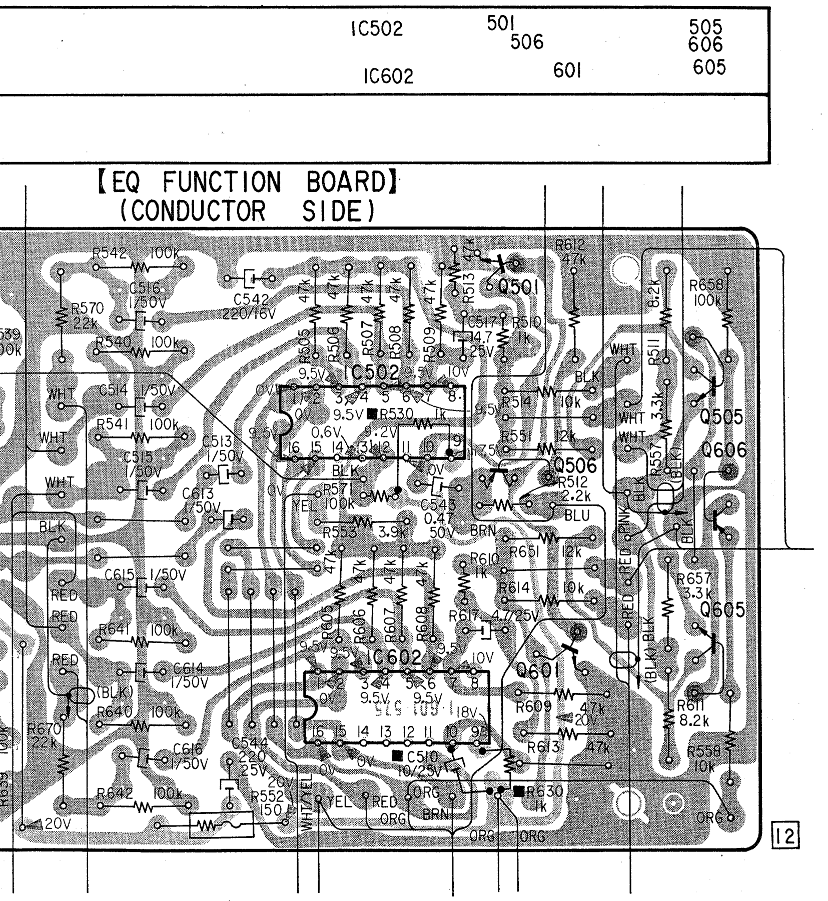

Q107
Q105
Q104
IC201

【TUNER BOARD】(CONDUCT
(E MODE

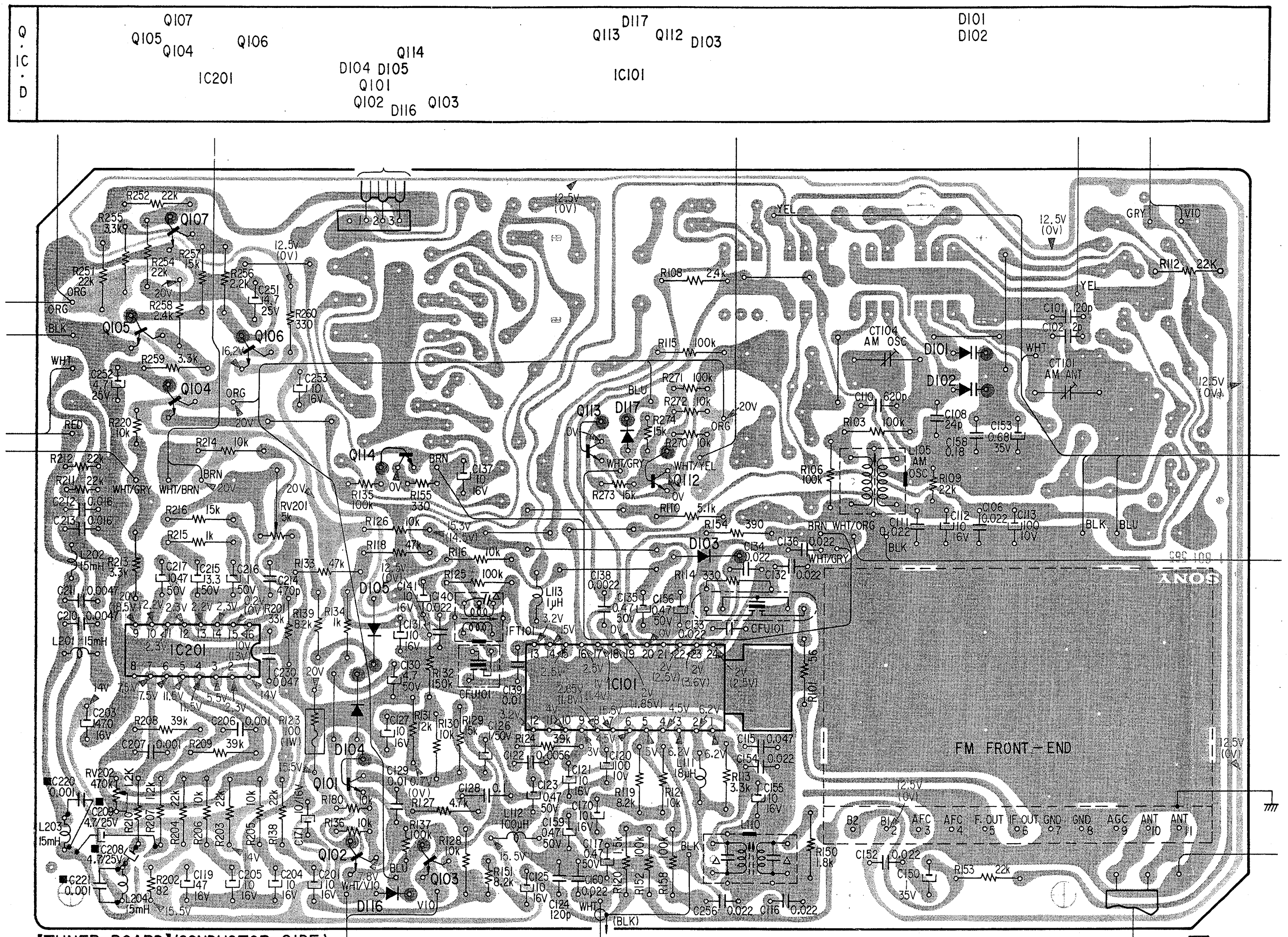
1
2
3
4
5

E F G H I J K L M

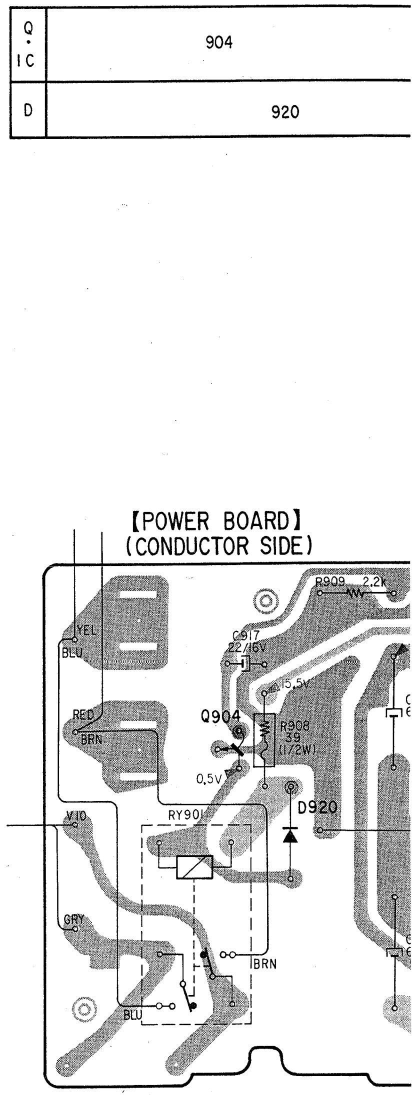

D503
D509, D505
D502
502
Q602
Q604
D504
IC504
D506
BASS
TONE
TREBLE
RV503
RV504
BALANCE
PRESET VOL
RV502
RV602
D503
D502
D509
D505
D504
Q602
IC504
D506
Q604
CP501
12


IC502
501
506
505
606
IC602
601
605
Q501
IC502
Q505
Q606
Q506
Q605
IC602
Q601
12

【EQ FUNCTION BOARD】
(CONDUCTOR SIDE)


Q
IC
D
Q107
Q105
Q104
Q106
IC201
D104
D105
Q101
Q102
D116
Q114
Q103
Q113
D117
Q112
D103
IC101
D101
D102
Q107
Q105
Q106
Q104
Q114
Q113
D117
Q112
D103
IC201
IC101
D105
D104
Q101
Q102
D116
Q103
D101
D102
FM FRONT-END
AFC
F. OUT
IF OUT
GND
AGC
ANT
12

【TUNER BOARD】(CONDUCTOR SIDE)
〈E MODEL〉

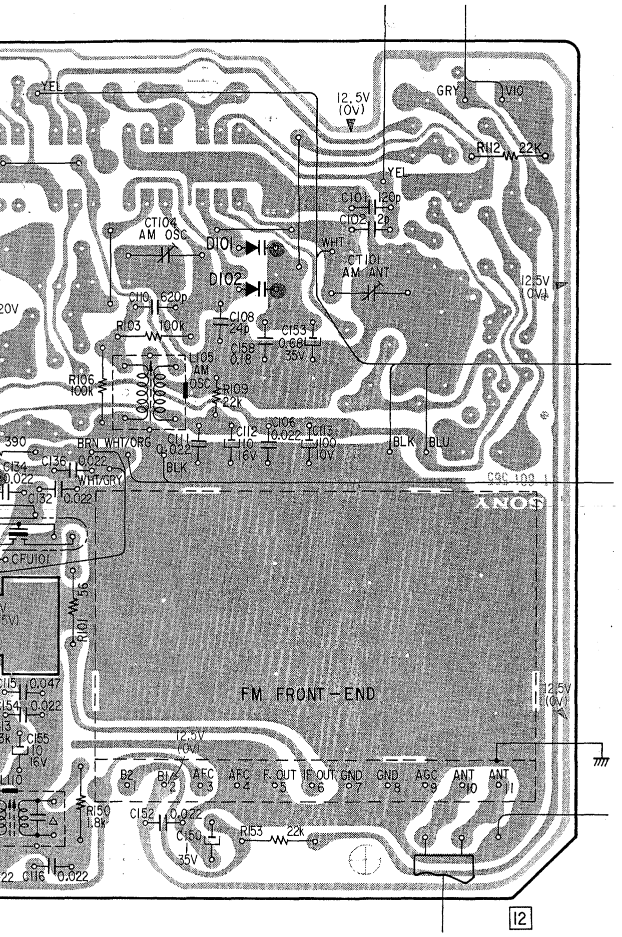

Q
IC
D
904
920
Q904
D920
RY901

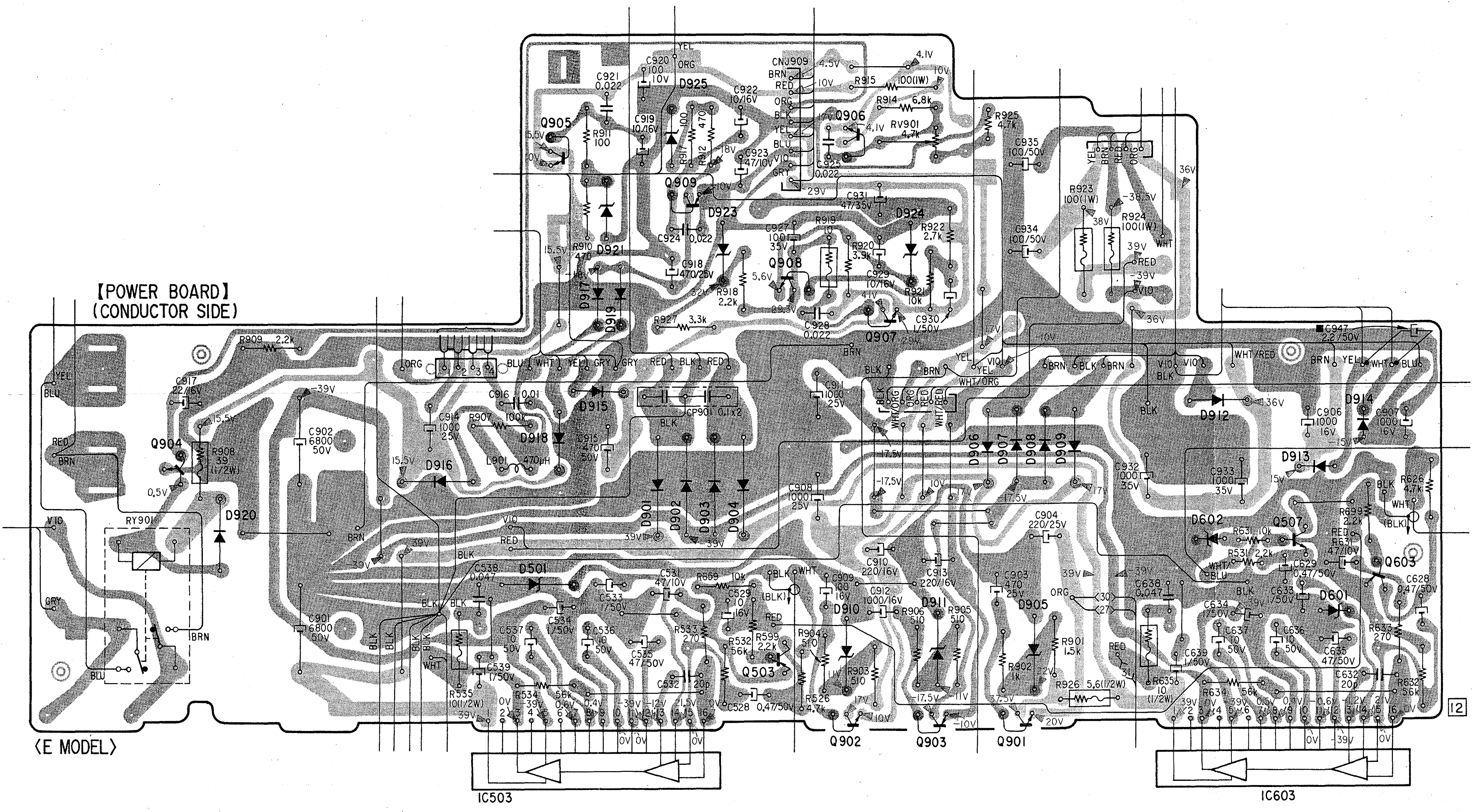
【POWER BOARD】
(CONDUCTOR SIDE)

〈E MODEL〉

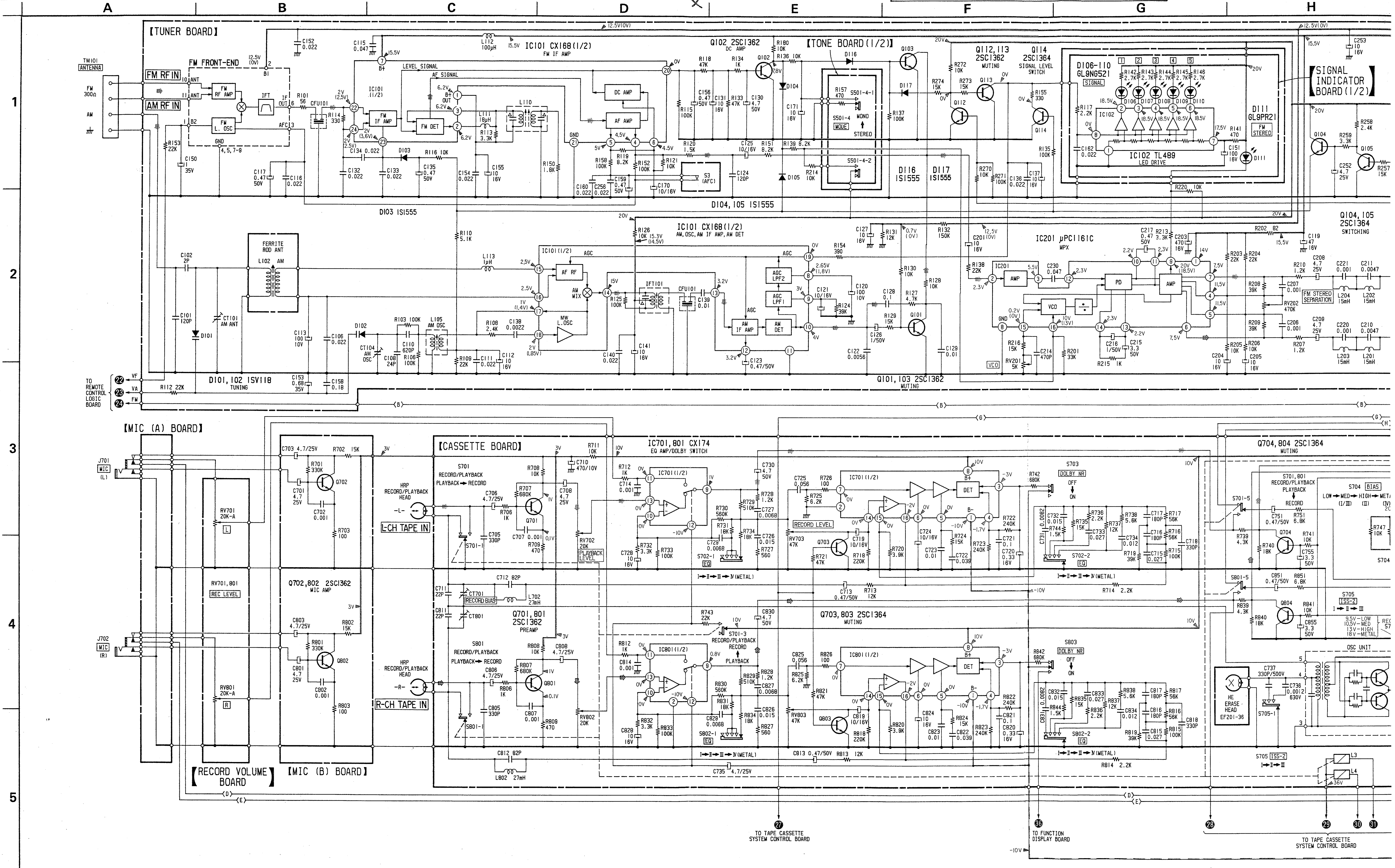
	D101 D102

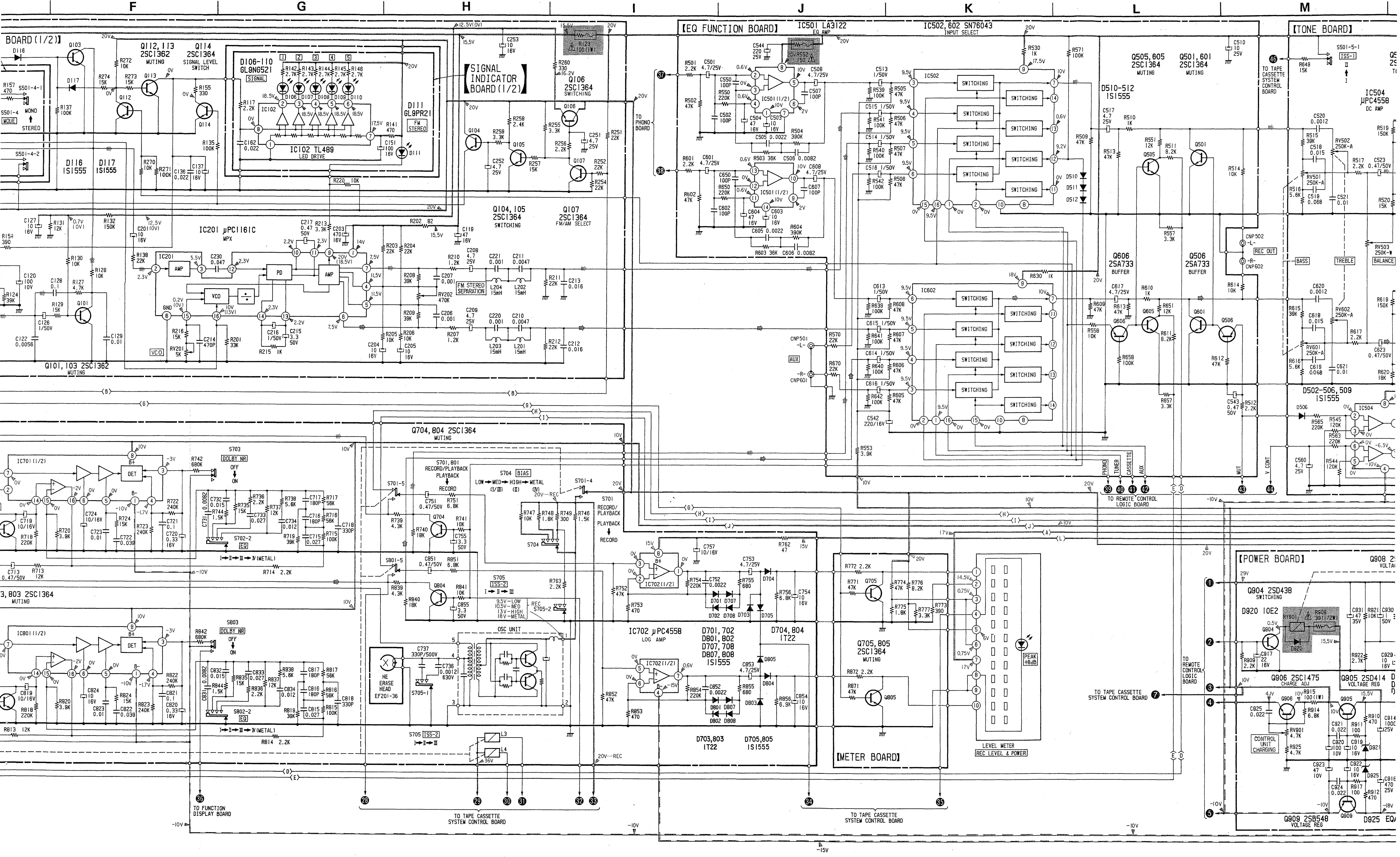
Q · IC	904 905 IC503 909 908 503 906 907 902 903 901 507 IC603 603
D	920 916 501 ·918 921 917 919 915 925 901–904 923 910 924 911 906–909 905 912 602 913 601 914

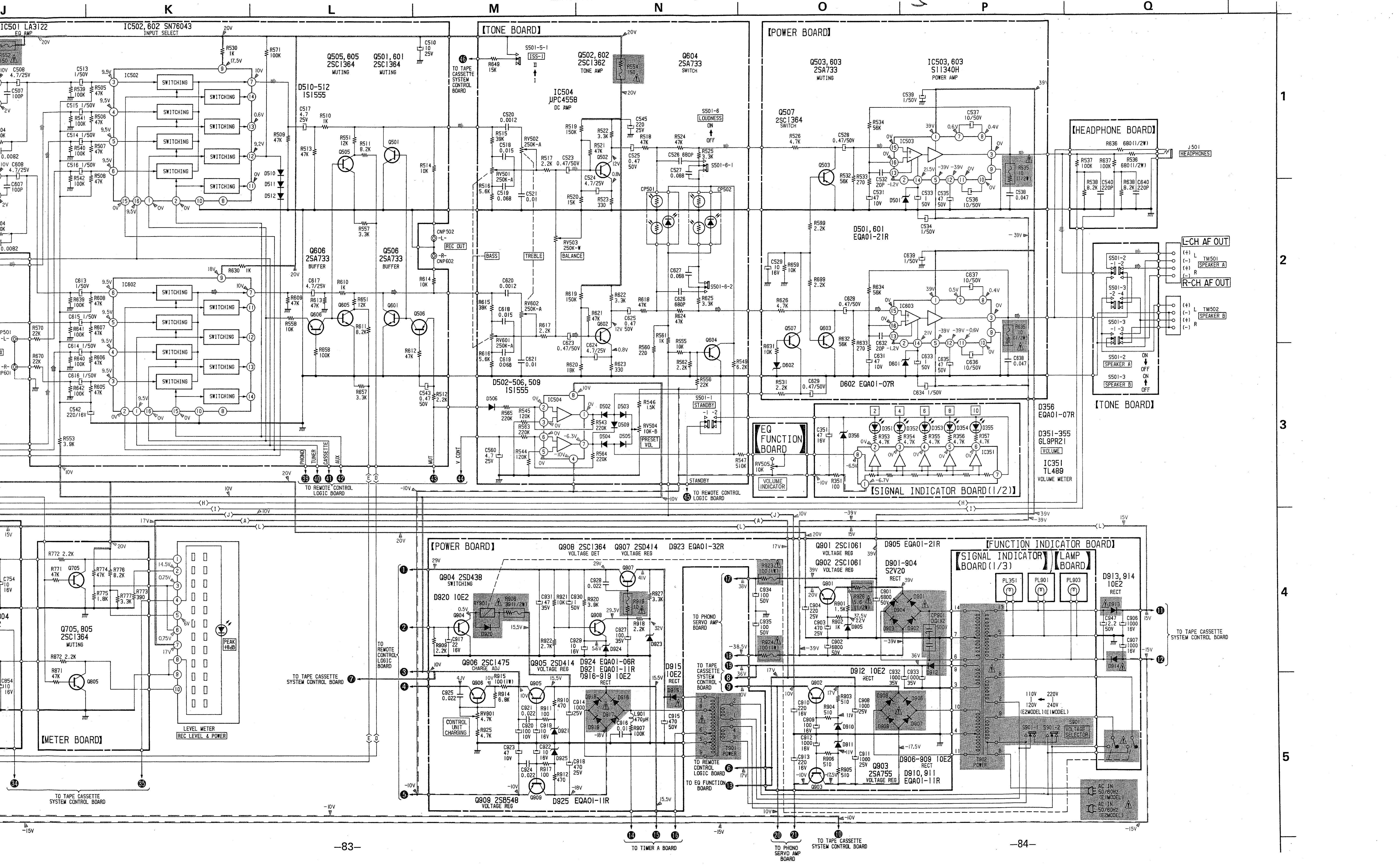

YEL
GRY
V10
12.5V (0V)
R112 22k
CT104 AM OSC
D101
D102
CT101 AM ANT
R103
R106 100k
L105 AM OSC
R109 22k
C153 0.68 35V
BRN
WHT/ORG
BLK
BLU
CFU101
FM FRONT-END
SONY
R150 1.8k
C152
R153 22k
B2
B1
AFC
F. OUT
IF OUT
GND
AGC
ANT
12


[POWER BOARD]
(CONDUCTOR SIDE)
<E MODEL>
CN909
Q904
Q905
Q906
Q907
Q908
Q909
Q503
Q507
Q603
Q901
Q902
Q903
RY901
RV901 4.7k
D501
D601
D602
D901
D902
D903
D904
D905
D906
D907
D908
D909
D910
D911
D912
D913
D914
D915
D916
D917
D918
D919
D920
D921
D923
D924
D925
C901 6800 50V
C902 6800 50V
R908 39 (1/2W)
R909 2.2k
R926 5.6(1/2W)
IC503
IC603
12

4-11. SCHEMATIC DIAGRAM

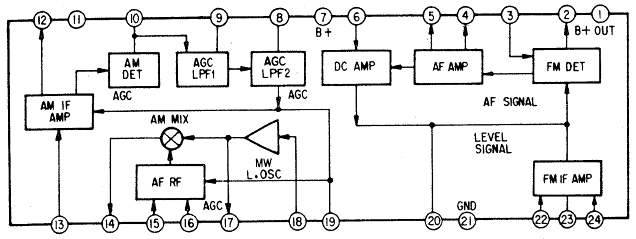

A
B
C
D
E
F
G
H
1
2
3
4
5
【TUNER BOARD】
TM101 ANTENNA
FM 300Ω
AM
FM RF IN
AM RF IN
FM FRONT-END
FM RF AMP
IFT
FM L. OSC
CFU101
IC101 CX168(1/2) FM IF AMP
LEVEL SIGNAL
AF SIGNAL
FM IF AMP
FM DET
DC AMP
AF AMP
S3 (AFC)
Q102 2SC1362 DC AMP
【TONE BOARD(1/2)】
S501-4 MONO STEREO
MODE
S501-4-2
D116 1S1555
D117 1S1555
D104, 105 1S1555
D103 1S1555
Q112, 113 2SC1362 MUTING
Q114 2SC1364 SIGNAL LEVEL SWITCH
D106-110 GL9NG521
SIGNAL
IC102 TL489 LED DRIVE
D111 GL9PR21
FM STEREO
SIGNAL INDICATOR BOARD(1/2)
Q104, 105 2SC1364 SWITCHING
FERRITE ROD ANT
L102 AM
CT101 AM ANT
IC101 CX168(1/2) AM, OSC, AM IF AMP, AM DET
AF RF
AM MIX
MW L. OSC
IFT101
CFU101
AGC LPF2
AGC LPF1
AM IF AMP
AM DET
L105 AM OSC
CT104 AM OSC
D101, 102 1SV118 TUNING
Q101, 103 2SC1362 MUTING
IC201 μPC1161C MPX
AMP
PD
VCO
RV201 5K
FM STEREO SEPARATION
TO REMOTE CONTROL LOGIC BOARD
【MIC (A) BOARD】
J701 MIC (L)
J702 MIC (R)
RV701 20K-A
RV801 20K-A
RV701, 801 REC LEVEL
【RECORD VOLUME BOARD】
Q702, 802 2SC1362 MIC AMP
【MIC (B) BOARD】
【CASSETTE BOARD】
S701 RECORD/PLAYBACK PLAYBACK→RECORD
S801 RECORD/PLAYBACK PLAYBACK→RECORD
HRP RECORD/PLAYBACK HEAD
L-CH TAPE IN
R-CH TAPE IN
Q701, 801 2SC1362 PREAMP
RV702 20K PLAYBACK LEVEL
RV802 20K
CT701 RECORD BIAS
CT801
IC701, 801 CX174 EQ AMP/DOLBY SWITCH
IC701(1/2)
IC801(1/2)
S702-1 EQ
S802-1 EQ
I→II→III→IV(METAL)
RECORD LEVEL
Q703, 803 2SC1364 MUTING
DET
S703 DOLBY NR OFF ON
S803 DOLBY NR OFF ON
S702-2 EQ
S802-2 EQ
S701-3 RECORD/PLAYBACK RECORD PLAYBACK
Q704, 804 2SC1364 MUTING
S701, 801 RECORD/PLAYBACK PLAYBACK RECORD
S704 BIAS LOW→MED→HIGH→METAL
S705 ISS-2 I→II→III
HE ERASE HEAD EF201-36
OSC UNIT
TO TAPE CASSETTE SYSTEM CONTROL BOARD
TO FUNCTION DISPLAY BOARD


F
G
H
I
J
K
L
M
BOARD (1/2)
Q103
Q112, 113 2SC1362 MUTING
Q114 2SC1364 SIGNAL LEVEL SWITCH
D106-110 GL9NG521
IC102 TL489 LED DRIVE
D111 GL9PR21
FM STEREO
SIGNAL INDICATOR BOARD (1/2)
Q106 2SC1364 SWITCHING
R123 100 (1W)
D116 1S1555
D117 1S1555
MONO
STEREO
S501-4
S501-4-2
Q104, 105 2SC1364 SWITCHING
Q107 2SC1364 FM/AM SELECT
IC201 μPC1161C MPX
AMP
PD
VCO
FM STEREO SEPARATION
Q101, 103 2SC1362 MUTING
[EQ FUNCTION BOARD]
IC501 LA3122 EQ AMP
IC502, 602 SN76043 INPUT SELECT
R552 150
IC501 (1/2)
IC502
IC602
SWITCHING
TO PHONO BOARD
CNP501 -L-
AUX
-R- CNP601
Q505, 605 2SC1364 MUTING
Q501, 601 2SC1364 MUTING
D510-512 1S1555
Q606 2SA733 BUFFER
Q506 2SA733 BUFFER
CNP502 -L-
REC OUT
-R- CNP602
[TONE BOARD]
S501-5-1
TO TAPE CASSETTE SYSTEM CONTROL BOARD
IC504 μPC4558 DC AMP
BASS
TREBLE
BALANCE
D502-506, 509 1S1555
PHONO
TUNER
CASSETTE
AUX
MUT
V CONT
TO REMOTE CONTROL LOGIC BOARD
Q704, 804 2SC1364 MUTING
IC701 (1/2)
DET
S703 DOLBY NR OFF ON
S702-2 EQ
I→II→III→IV (METAL)
3, 803 2SC1364 MUTING
IC801 (1/2)
S803 DOLBY NR OFF ON
S802-2 EQ
S701, 801 RECORD/PLAYBACK PLAYBACK RECORD
S704 BIAS LOW→MED→HIGH→METAL (I/III) (II) (IV)
S701-4
S701 RECORD/PLAYBACK PLAYBACK RECORD
S701-5
S801-5
S705 ISS-2 I→II→III
9.5V—LOW 10.5V—MED 13V—HIGH 18V—METAL
OSC UNIT
HE ERASE HEAD EF201-36
S705-1
S705 ISS-2
L3
L4
IC702 μPC4558 LOG AMP
IC702 (1/2)
D701, 702 D801, 802 D707, 708 D807, 808 1S1555
D704, 804 1T22
D703, 803 1T22
D705, 805 1S1555
Q705, 805 2SC1364 MUTING
[METER BOARD]
LEVEL METER REC LEVEL & POWER
PEAK +8dB
TO FUNCTION DISPLAY BOARD
TO TAPE CASSETTE SYSTEM CONTROL BOARD
TO TAPE CASSETTE SYSTEM CONTROL BOARD
TO REMOTE CONTROL LOGIC BOARD
[POWER BOARD]
Q904 2SD438 SWITCHING
D920 10E2
RY901
R908 39 (1/2W)
Q906 2SC1475 CHARGE ADJ
Q905 2SD414 VOLTAGE REG
CONTROL UNIT CHARGING
Q909 2SB548 VOLTAGE REG
Q908
D925

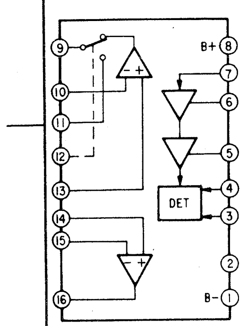

J
K
L
M
N
O
P
Q
1
2
3
4
5
IC501 LA3122 EQ AMP
IC502, 602 SN76043 INPUT SELECT
SWITCHING
Q505, 605 2SC1364 MUTING
Q501, 601 2SC1364 MUTING
D510-512 1S1555
Q606 2SA733 BUFFER
Q506 2SA733 BUFFER
REC OUT
CNP502
CNP602
TO REMOTE CONTROL LOGIC BOARD
PHONO
TUNER
CASSETTE
AUX
MUT
V CONT
【TONE BOARD】
TO TAPE CASSETTE SYSTEM CONTROL BOARD
S501-5-1
Q502, 602 2SC1362 TONE AMP
IC504 μPC4558 DC AMP
Q604 2SA733 SWITCH
S501-6 LOUDNESS ON OFF
BASS
TREBLE
BALANCE
D502-506, 509 1S1555
IC505
PRESET VOL
S501-1 STANDBY
STANDBY
【POWER BOARD】
Q503, 603 2SA733 MUTING
IC503, 603 SI1340H POWER AMP
Q507 2SC1364 SWITCH
D501, 601 EQA01-21R
D602 EQA01-07R
【HEADPHONE BOARD】
J501 HEADPHONES
L-CH AF OUT
R-CH AF OUT
TM501 SPEAKER A
TM502 SPEAKER B
S501-2 SPEAKER A ON OFF
S501-3 SPEAKER B ON OFF
【TONE BOARD】
【EQ FUNCTION BOARD】
RV505 VOLUME INDICATOR
【SIGNAL INDICATOR BOARD (1/2)】
IC351
D356 EQA01-07R
D351-355 GL9PR21 VOLUME
IC351 TL489 VOLUME METER
TO REMOTE CONTROL LOGIC BOARD
Q705, 805 2SC1364 MUTING
LEVEL METER REC LEVEL & POWER
PEAK +8dB
【METER BOARD】
TO TAPE CASSETTE SYSTEM CONTROL BOARD
【POWER BOARD】
Q908 2SC1364 VOLTAGE DET
Q907 2SD414 VOLTAGE REG
D923 EQA01-32R
Q904 2SD438 SWITCHING
D920 10E2
RY901
Q906 2SC1475 CHARGE ADJ
Q905 2SD414 VOLTAGE REG
D924 EQA01-06R
D921 EQA01-11R
D916-919 10E2 RECT
D915 10E2 RECT
CONTROL UNIT CHARGING
Q909 2SB548 VOLTAGE REG
D925 EQA01-11R
TO REMOTE CONTROL LOGIC BOARD
TO TAPE CASSETTE SYSTEM CONTROL BOARD
TO PHONO SERVO AMP BOARD
TO REMOTE CONTROL LOGIC BOARD
TO EQ FUNCTION BOARD
T901 POWER
Q901 2SC1061 VOLTAGE REG
Q902 2SC1061 VOLTAGE REG
D905 EQA01-21R
D901-904 S2V20 RECT
D912 10E2 RECT
Q903 2SA755 VOLTAGE REG
D906-909 10E2 RECT
D910, 911 EQA01-11R
【FUNCTION INDICATOR BOARD】
【SIGNAL INDICATOR BOARD (1/3)】
【LAMP BOARD】
PL351
PL901
PL903
D913, 914 10E2 RECT
T902 POWER
110V 120V 220V 240V (E2MODEL) (E MODEL)
S901 VOLTAGE SELECTOR
AC IN 50/60Hz (E MODEL)
AC IN 50/60Hz (E2MODEL)
TO TIMER A BOARD
TO PHONO SERVO AMP BOARD
TO TAPE CASSETTE SYSTEM CONTROL BOARD

4-12. MOUNTING DIAGRAM

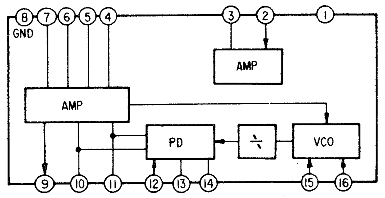
IC101 CX168


AM IF AMP
AM DET
AGC LPF1
AGC LPF2
DC AMP
AF AMP
FM DET
AM MIX
AF RF
MW L.OSC
LEVEL SIGNAL
AF SIGNAL
FM IF AMP
AGC
B+
B+ OUT
GND

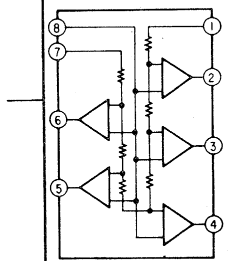
IC701,801 CX174



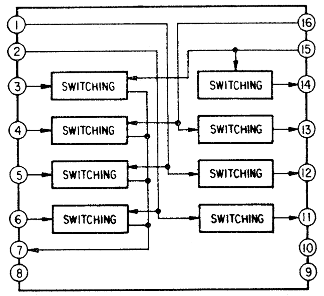
IC201 μPC1161C

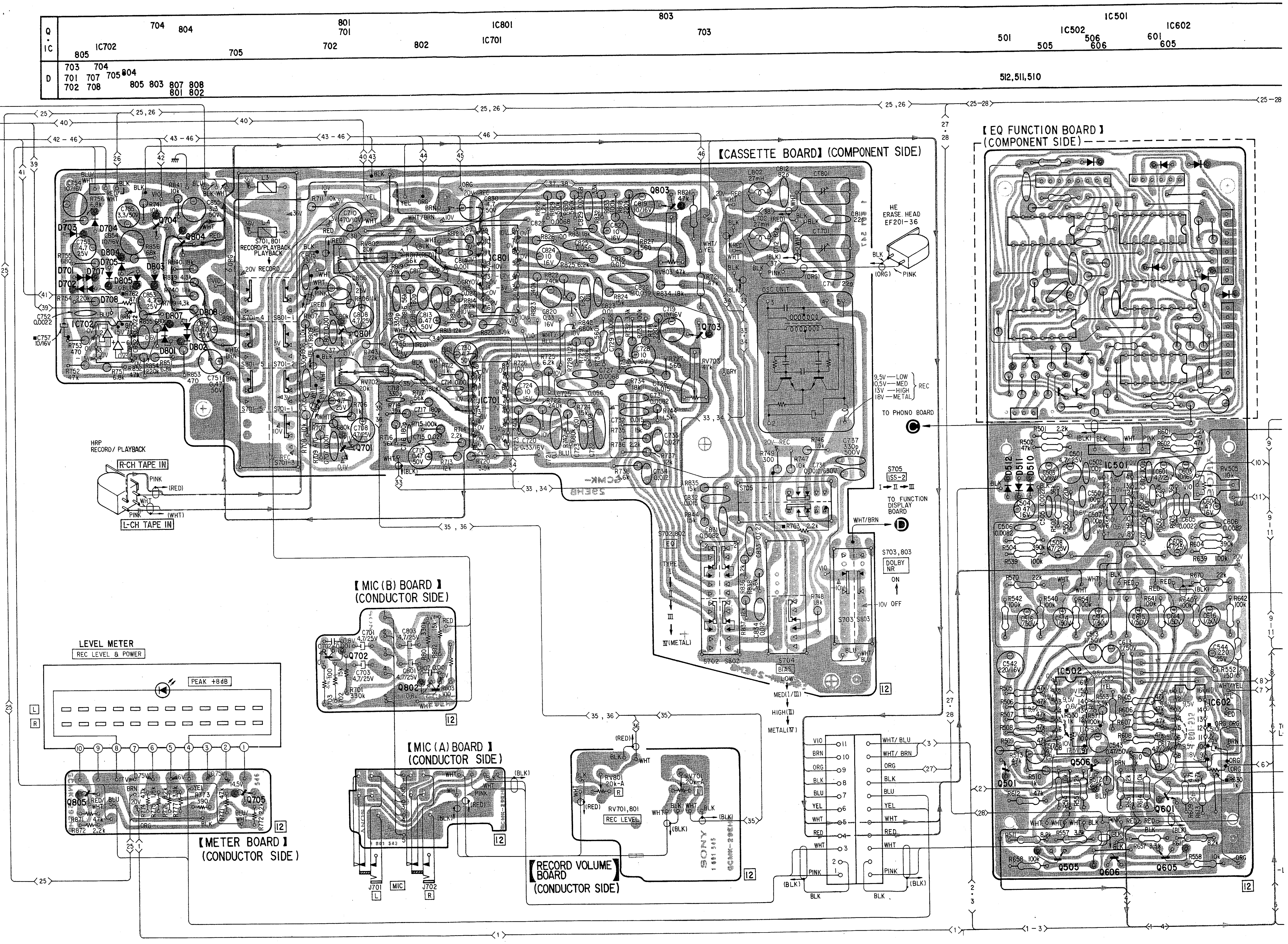

GND
AMP
PD
VCO

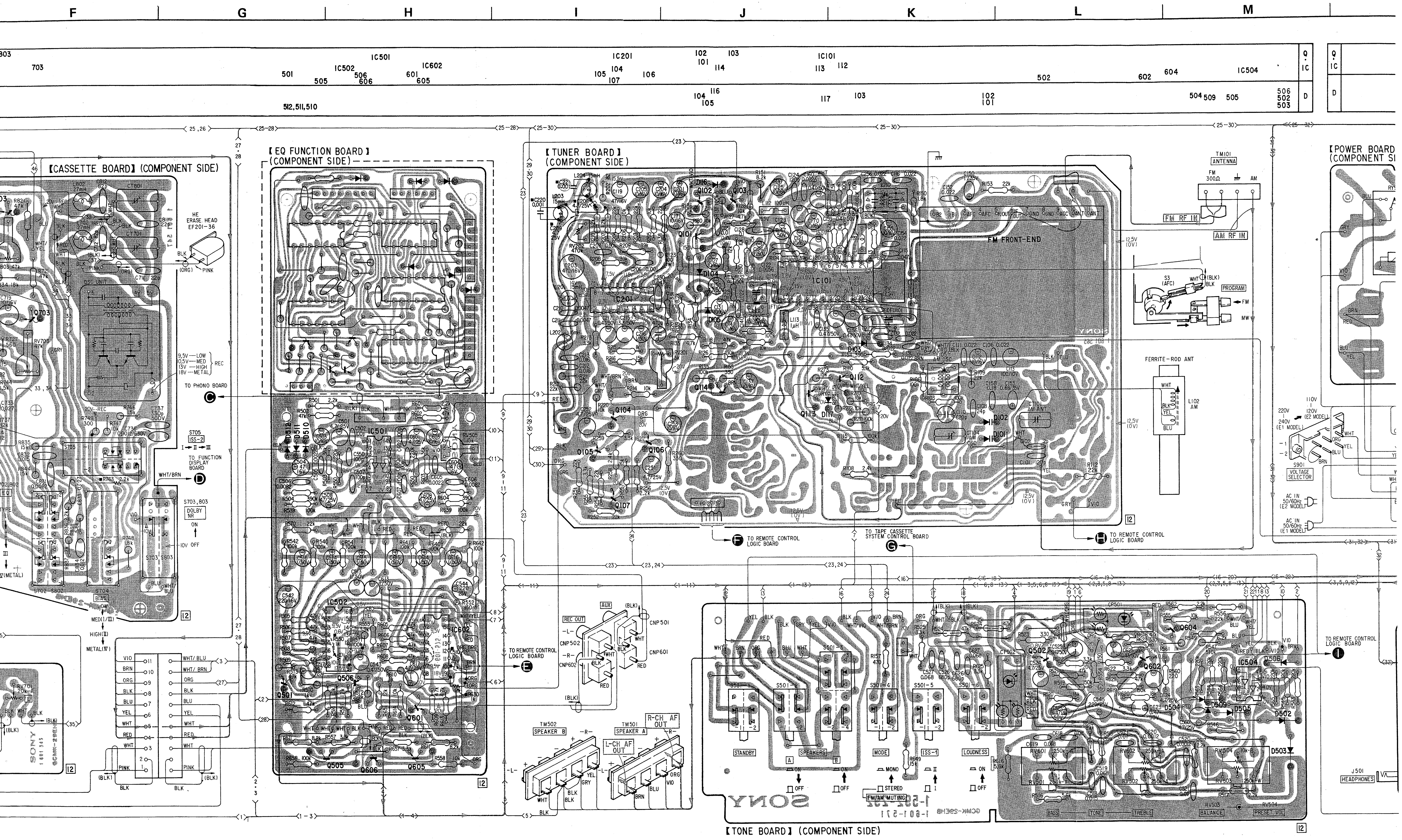
IC102,351 TL489

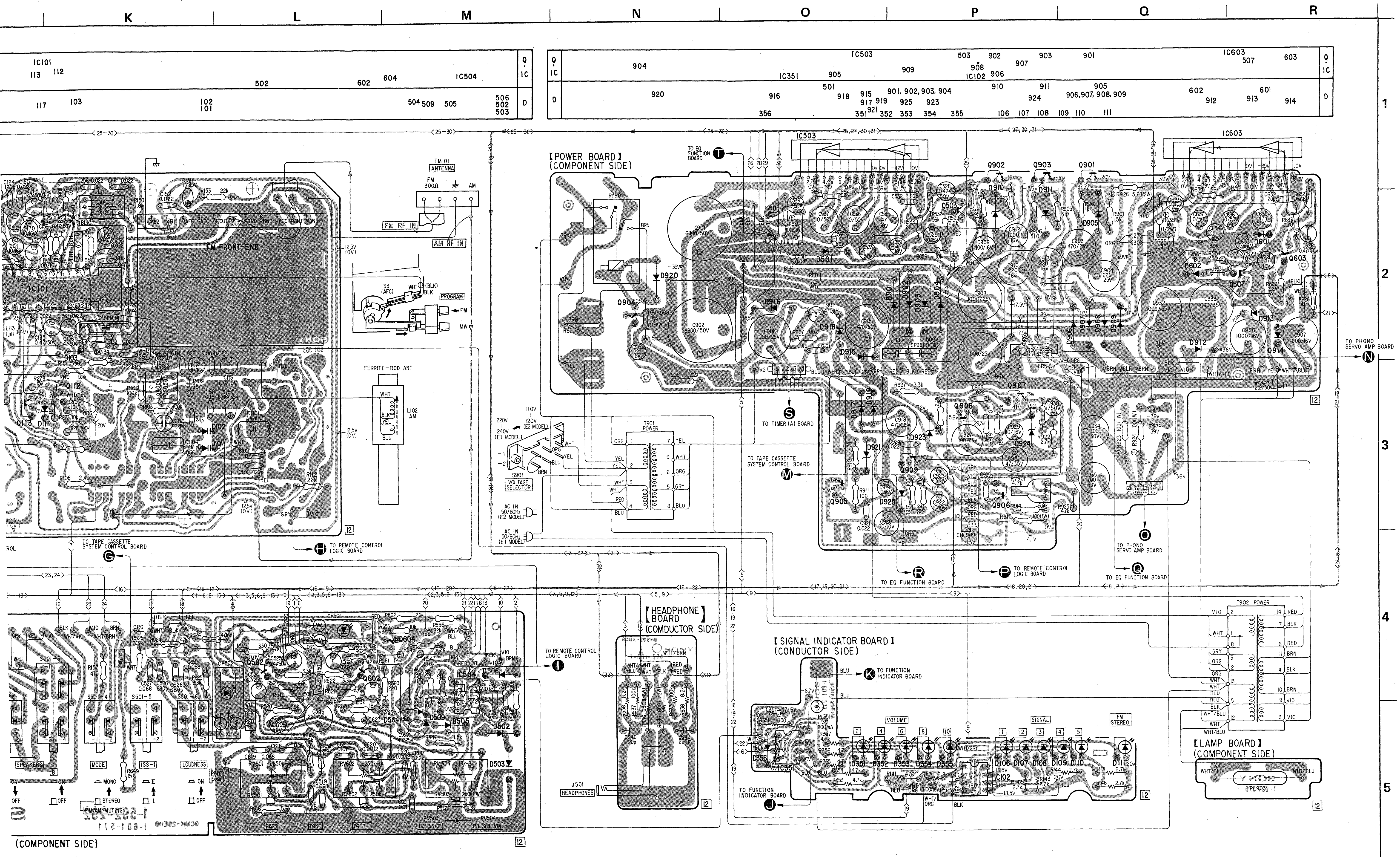


IC502,602 SN76043

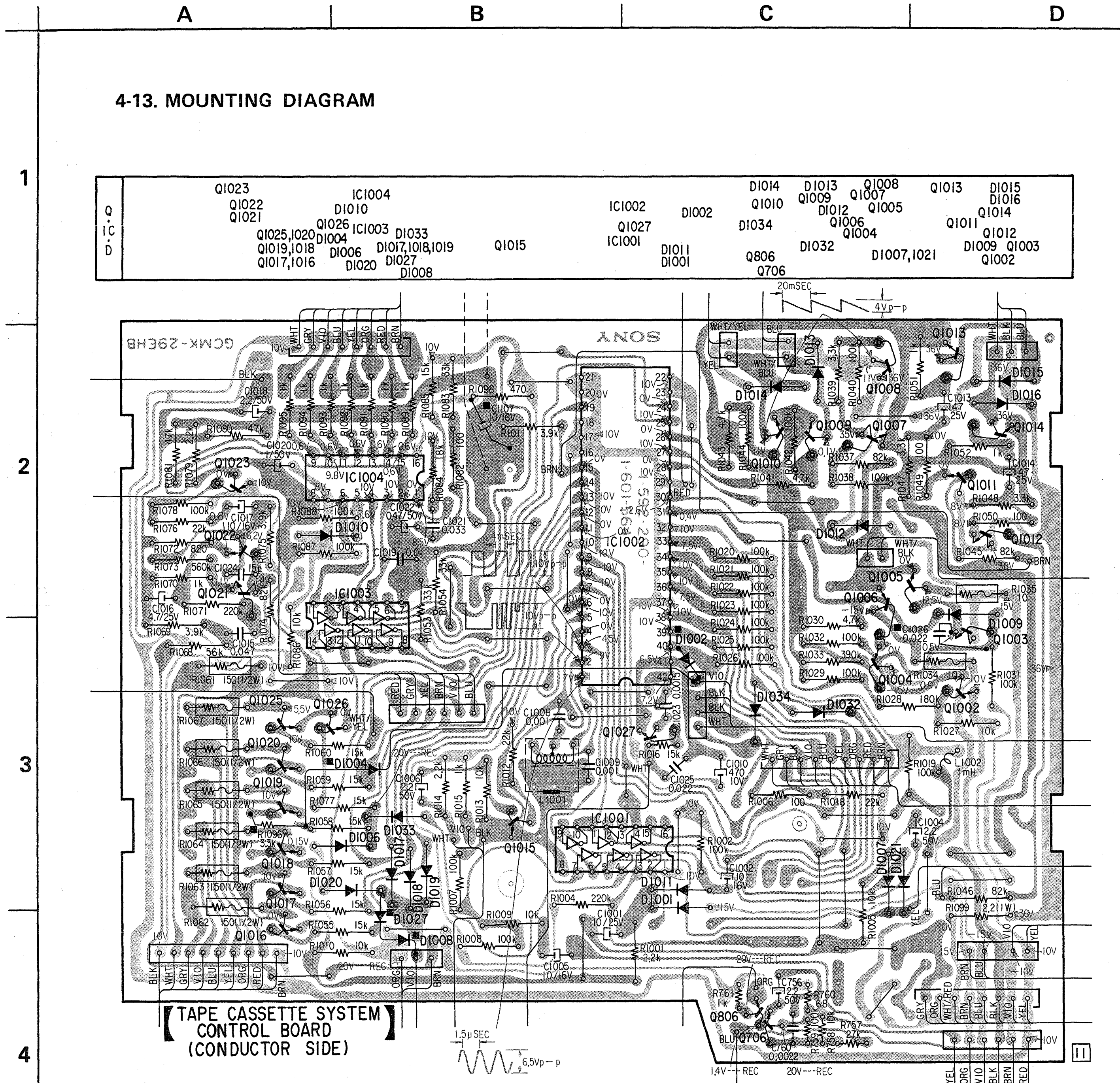



Q · IC
D
TO TAPE CASSETTE SYSTEM CONTROL BOARD
【CASSETTE BOARD】(COMPONENT SIDE)
【EQ FUNCTION BOARD】(COMPONENT SIDE)
HE ERASE HEAD EF201-36
S701,801 RECORD/PLAYBACK
TO PHONO BOARD
S705 ISS-2
TO FUNCTION DISPLAY BOARD
S703,803 DOLBY NR
S702,802 EQ TYPE
S704 BIAS
HRP RECORD/PLAYBACK
R-CH TAPE IN
L-CH TAPE IN
LEVEL METER
REC LEVEL & POWER
PEAK +8dB
【METER BOARD】(CONDUCTOR SIDE)
【MIC(B) BOARD】(CONDUCTOR SIDE)
【MIC(A) BOARD】(CONDUCTOR SIDE)
【RECORD VOLUME BOARD】(CONDUCTOR SIDE)
RV701,801 REC LEVEL
J701 MIC J702
9.5V—LOW
0.5V—MED
13V—HIGH
18V—METAL
REC
IC501
IC502
IC601
IC602
IC701
IC801
IC702
SONY

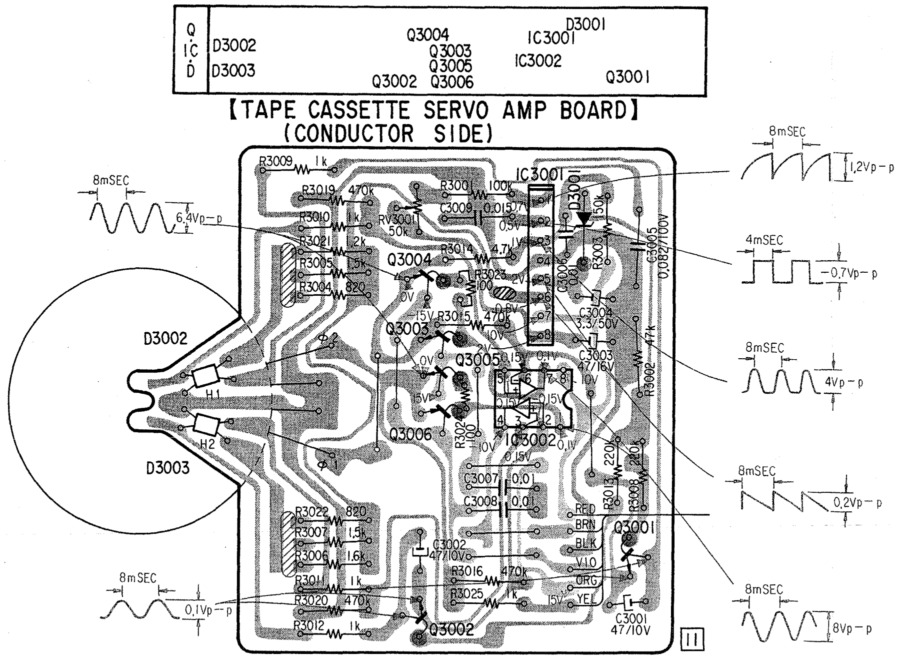

F
G
H
I
J
K
L
M
Q IC
D
【CASSETTE BOARD】(COMPONENT SIDE)
【EQ FUNCTION BOARD】(COMPONENT SIDE)
【TUNER BOARD】(COMPONENT SIDE)
【TONE BOARD】(COMPONENT SIDE)
【POWER BOARD】(COMPONENT SI
HE ERASE HEAD EF201-36
OSC UNIT
TO PHONO BOARD
TO FUNCTION DISPLAY BOARD
S705 ISS-2
S703, 803 DOLBY NR
BIAS
MED(I/II)
HIGH(II)
METAL(IV)
FM FRONT-END
TM101 ANTENNA
FM 300Ω
AM
FM RF IN
AM RF IN
S3 (AFC)
PROGRAM
FERRITE-ROD ANT
L102 AM
S901 VOLTAGE SELECTOR
AC IN 50/60Hz (E2 MODEL)
AC IN 50/60Hz (E1 MODEL)
TO REMOTE CONTROL LOGIC BOARD
TO TAPE CASSETTE SYSTEM CONTROL BOARD
REC OUT
AUX
CNP501
CNP502
CNP601
CNP602
TM502 SPEAKER B
TM501 SPEAKER A
L-CH AF OUT
R-CH AF OUT
STANDBY
SPEAKERS
MODE
ISS-1
LOUDNESS
MONO
STEREO
FM/AM MUTING
BASS
TONE
TREBLE
BALANCE
PRESET VOL
J501 HEADPHONES
SONY


K
L
M
N
O
P
Q
R
1
2
3
4
5
IC101
IC503
IC504
IC351
IC102
IC603
FM FRONT-END
TM101 ANTENNA
FM 300Ω
AM
FM RF IN
AM RF IN
S3 (AFC)
PROGRAM
FERRITE-ROD ANT
L102 AM
【POWER BOARD】 (COMPONENT SIDE)
TO EQ FUNCTION BOARD
T901 POWER
S901 VOLTAGE SELECTOR
220V 240V (E1 MODEL)
110V 120V (E2 MODEL)
AC IN 50/60Hz (E2 MODEL)
AC IN 50/60Hz (E1 MODEL)
TO TIMER (A) BOARD
TO TAPE CASSETTE SYSTEM CONTROL BOARD
TO REMOTE CONTROL LOGIC BOARD
TO EQ FUNCTION BOARD
TO PHONO SERVO AMP BOARD
TO PHONO SERVO AMP BOARD
TO EQ FUNCTION BOARD
TO TAPE CASSETTE SYSTEM CONTROL BOARD
TO REMOTE CONTROL LOGIC BOARD
TO REMOTE CONTROL LOGIC BOARD
【HEADPHONE BOARD】 (CONDUCTOR SIDE)
J501 HEADPHONES
【SIGNAL INDICATOR BOARD】 (CONDUCTOR SIDE)
TO FUNCTION INDICATOR BOARD
TO FUNCTION INDICATOR BOARD
VOLUME
SIGNAL
FM STEREO
T902 POWER
【LAMP BOARD】 (COMPONENT SIDE)
SPEAKERS
MODE
1SS-1
LOUDNESS
STEREO
MONO
FM/AM MUTING
BASS
TONE
TREBLE
BALANCE
PRESET VOL
(COMPONENT SIDE)

4-13. MOUNTING DIAGRAM

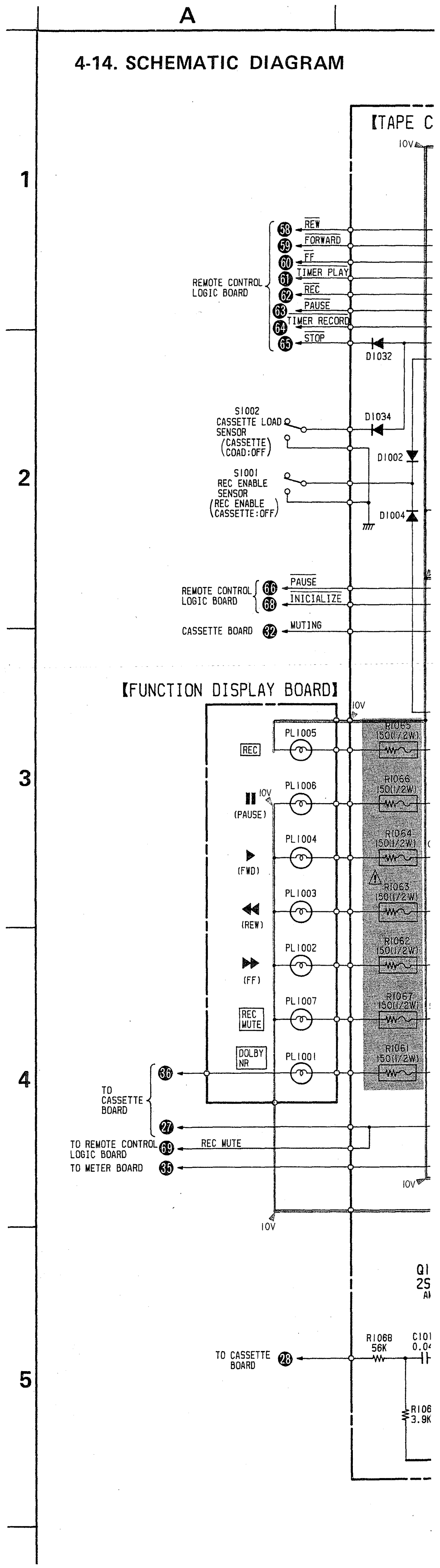

A
B
C
D
1
2
3
4
Q IC D
Q1023 Q1022 Q1021 Q1025,1020 Q1019,1018 Q1017,1016
IC1004 D1010 Q1026 D1004 IC1003 D1006 D1020 D1033 D1017,1018,1019 D1027 D1008
Q1015
IC1002 Q1027 IC1001 D1002 D1011 D1001
D1014 D1010 D1034 Q806 Q706
D1013 Q1009 D1012 Q1006 Q1004 D1032
Q1008 Q1007 Q1005 D1007,1021
Q1013 Q1011 D1015 D1016 Q1014 Q1012 D1009 Q1003 Q1002
GCMK-29EHB
SONY
20mSEC
4Vp-p
1.5μSEC
6.5Vp-p
1.4V---REC
20V---REC

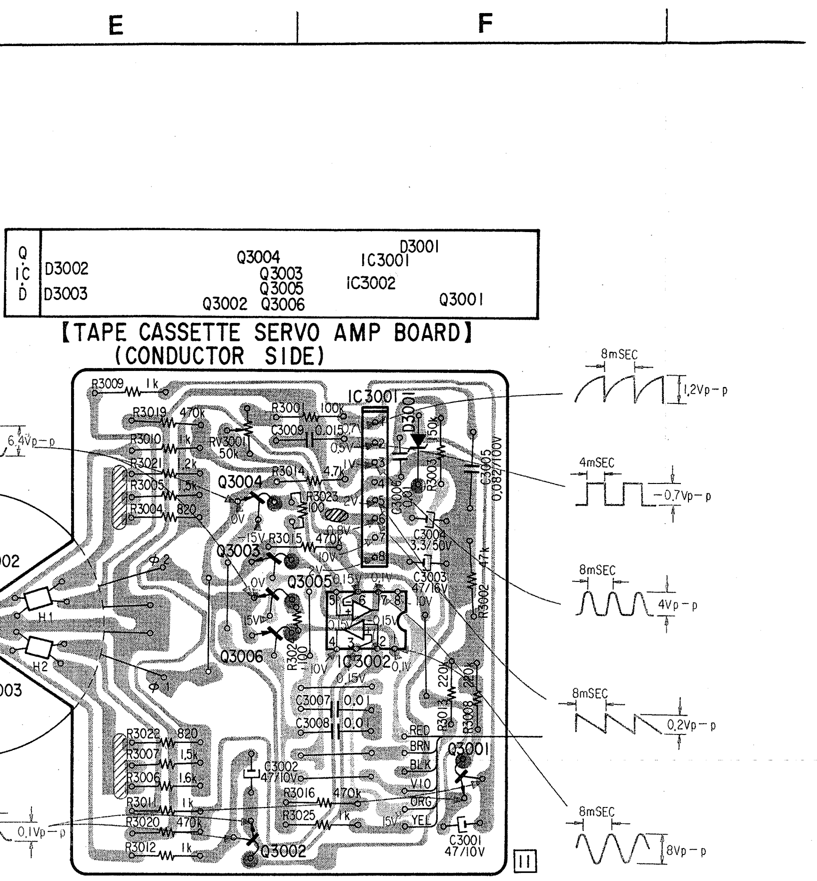
【TAPE CASSETTE SYSTEM CONTROL BOARD】
(CONDUCTOR SIDE)


E
F
Q IC D
D3002 D3003
Q3004 Q3003 Q3005 Q3002 Q3006
D3001 IC3001 IC3002 Q3001
D3002
D3003
H1
H2
8mSEC
6.4Vp-p
4mSEC
0.7Vp-p
4Vp-p
1.2Vp-p
0.2Vp-p
8Vp-p
0.1Vp-p

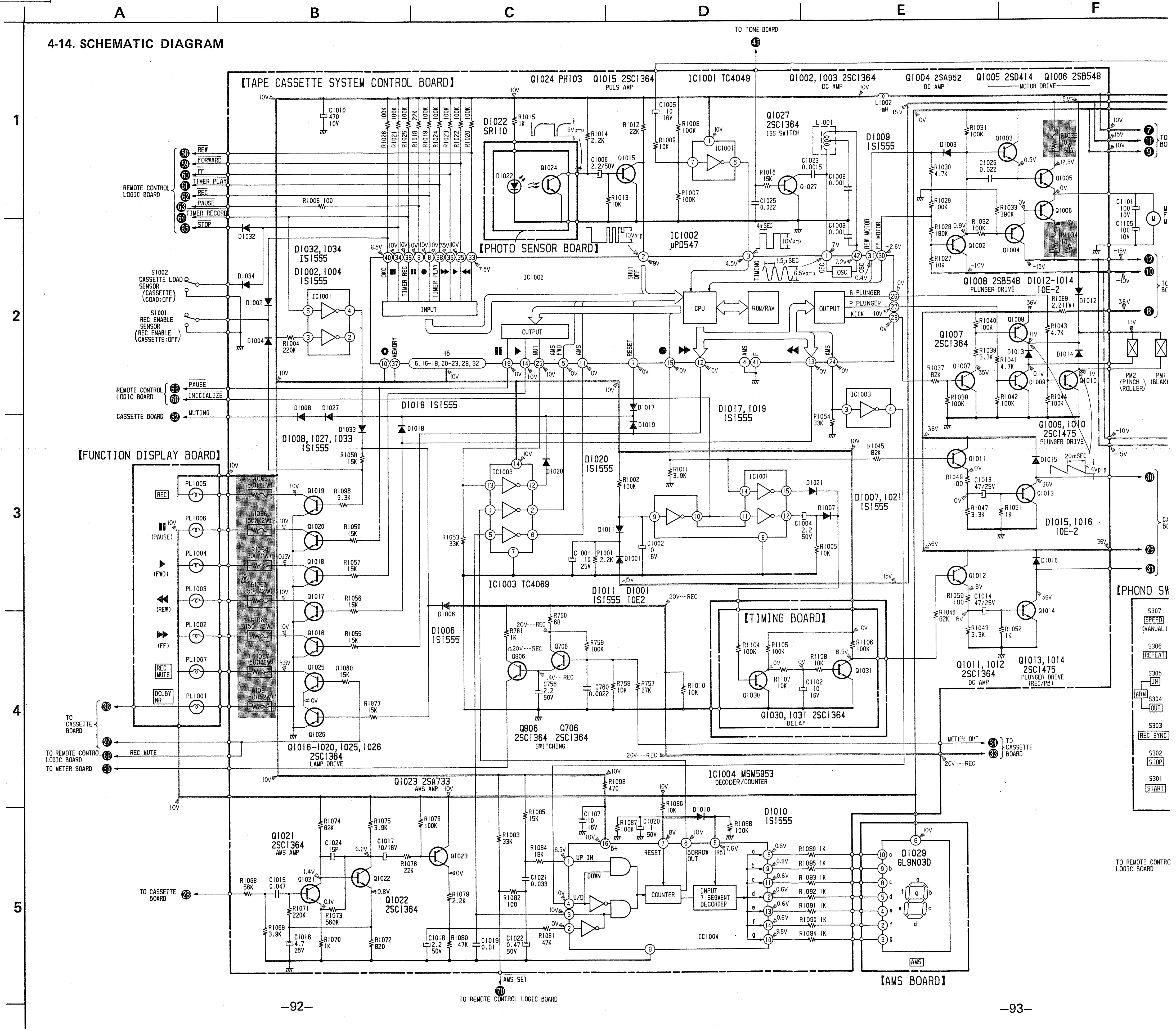
【TAPE CASSETTE SERVO AMP BOARD】
(CONDUCTOR SIDE)

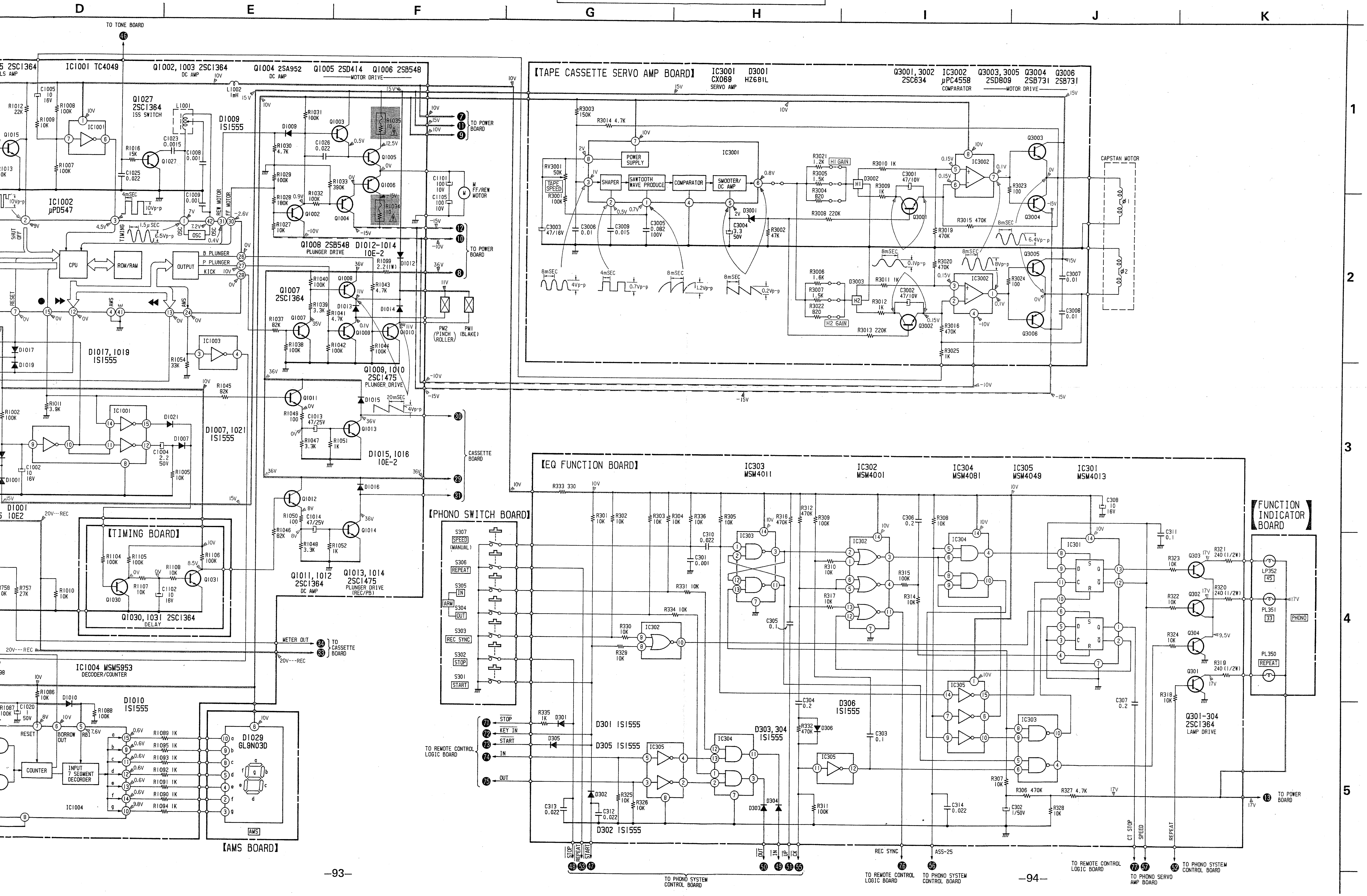
4-14. SCHEMATIC DIAGRAM


A
1
2
3
4
5
【TAPE C
REMOTE CONTROL LOGIC BOARD
REW
FORWARD
FF
TIMER PLAY
REC
PAUSE
TIMER RECORD
STOP
D1032
S1002 CASSETTE LOAD SENSOR (CASSETTE) (COAD:OFF)
S1001 REC ENABLE SENSOR (REC ENABLE CASSETTE:OFF)
D1034
D1002
D1004
REMOTE CONTROL LOGIC BOARD
PAUSE
INICIALIZE
CASSETTE BOARD
MUTING
【FUNCTION DISPLAY BOARD】
REC
(PAUSE)
(FWD)
(REW)
(FF)
REC MUTE
DOLBY NR
PL1005 PL1006 PL1004 PL1003 PL1002 PL1007 PL1001
R1065 R1066 R1064 R1063 R1062 R1067 R1061 150(1/2W)
TO CASSETTE BOARD
TO REMOTE CONTROL LOGIC BOARD
TO METER BOARD
REC MUTE
10V
TO CASSETTE BOARD
R1068 56K
R1069 3.9K

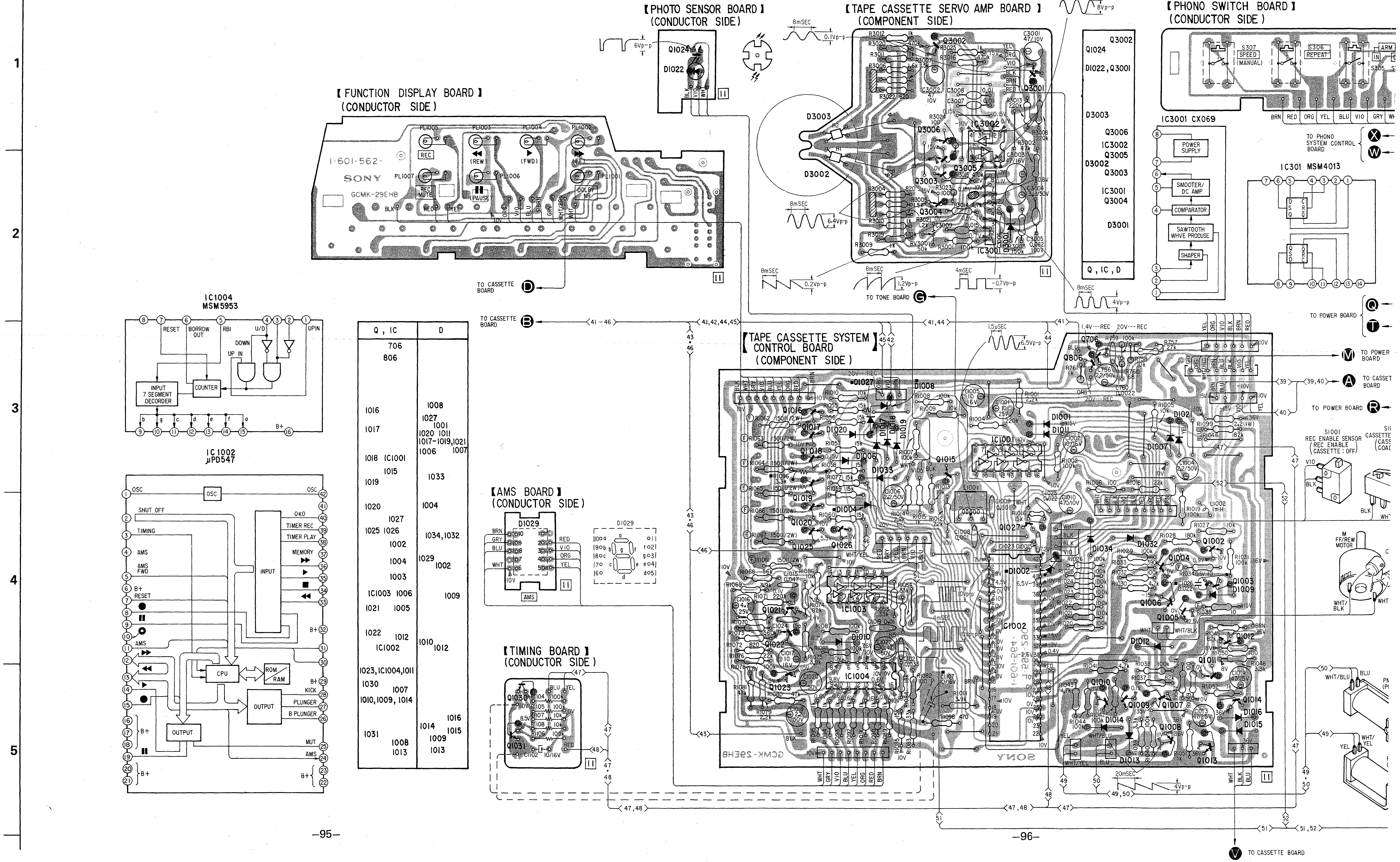

E
F
Q
IC
D
D3002
D3003
Q3004
Q3003
Q3005
Q3002
Q3006
IC3001
IC3002
D3001
Q3001
【TAPE CASSETTE SERVO AMP BOARD】
(CONDUCTOR SIDE)
8mSEC
1.2Vp-p
4mSEC
0.7Vp-p
8mSEC
4Vp-p
8mSEC
0.2Vp-p
8mSEC
8Vp-p
6.4Vp-p
0.1Vp-p
H1
H2
RED
BRN
BLK
VIO
ORG
YEL
C3001 47/10V
II

4-14. SCHEMATIC DIAGRAM


A
B
C
D
E
F
1
2
3
4
5
TO TONE BOARD
【TAPE CASSETTE SYSTEM CONTROL BOARD】
Q1024 PH103
Q1015 2SC1364 PULS AMP
IC1001 TC4049
Q1002, 1003 2SC1364 DC AMP
Q1004 2SA952 DC AMP
Q1005 2SD414
Q1006 2SB548 MOTOR DRIVE
REMOTE CONTROL LOGIC BOARD
REW
FORWARD
FF
TIMER PLAY
REC
PAUSE
TIMER RECORD
STOP
D1022 SR110
【PHOTO SENSOR BOARD】
Q1027 2SC1364 ISS SWITCH
L1001
IC1002 μPD547
D1009 1S1555
D1032, 1034 1S1555
D1002, 1004 1S1555
IC1002
S1002 CASSETTE LOAD SENSOR (CASSETTE) (COAD:OFF)
S1001 REC ENABLE SENSOR (REC ENABLE CASSETTE:OFF)
INPUT
OUTPUT
CPU
ROM/RAM
OUTPUT
B PLUNGER
P PLUNGER
KICK
REW MOTOR
FF MOTOR
MEMORY
RESET
AMS
TIMER REC
TIMER PLAY
SHUT OFF
TIMING
OSC
Q1008 2SB548 PLUNGER DRIVE
D1012-1014 10E-2
Q1007 2SC1364
Q1009, 1010 2SC1475 PLUNGER DRIVE
PM2 (PINCH ROLLER)
PM1 (BLAKE
REMOTE CONTROL LOGIC BOARD
PAUSE
INICIALIZE
CASSETTE BOARD
MUTING
D1008
D1027
D1018 1S1555
D1008, 1027, 1033 1S1555
D1017, 1019 1S1555
IC1003
D1020 1S1555
IC1001
D1007, 1021 1S1555
IC1003 TC4069
D1011 D1001 1S1555 10E2
D1015, 1016 10E-2
【FUNCTION DISPLAY BOARD】
REC
(PAUSE)
(FWD)
(REW)
(FF)
REC MUTE
DOLBY NR
PL1005
PL1006
PL1004
PL1003
PL1002
PL1007
PL1001
R1065 150(1/2W)
R1066 150(1/2W)
R1064 150(1/2W)
R1063 150(1/2W)
R1062 150(1/2W)
R1067 150(1/2W)
R1061 150(1/2W)
D1006 1S1555
Q806
Q706
Q806 Q706 2SC1364 SWITCHING
【TIMING BOARD】
Q1030, 1031 2SC1364 DELAY
Q1011, 1012 2SC1364 DC AMP
Q1013, 1014 2SC1475 PLUNGER DRIVE (REC/PB)
【PHONO SW
S307 SPEED (MANUAL)
S306 REPEAT
S305 IN
S304 ARM OUT
S303 REC SYNC
S302 STOP
S301 START
TO CASSETTE BOARD
TO REMOTE CONTROL LOGIC BOARD
REC MUTE
TO METER BOARD
Q1016-1020, 1025, 1026 2SC1364 LAMP DRIVE
Q1023 2SA733 AMS AMP
IC1004 MSM5953 DECODER/COUNTER
METER OUT
TO CASSETTE BOARD
Q1021 2SC1364 AMS AMP
Q1022 2SC1364
TO CASSETTE BOARD
D1010 1S1555
UP IN
DOWN
U/D
RESET
BORROW OUT
RBI
COUNTER
INPUT 7 SEGMENT DECORDER
IC1004
D1029 GL9N03D
AMS
【AMS BOARD】
AMS SET
TO REMOTE CONTROL LOGIC BOARD
TO REMOTE CONTROL LOGIC BOARD

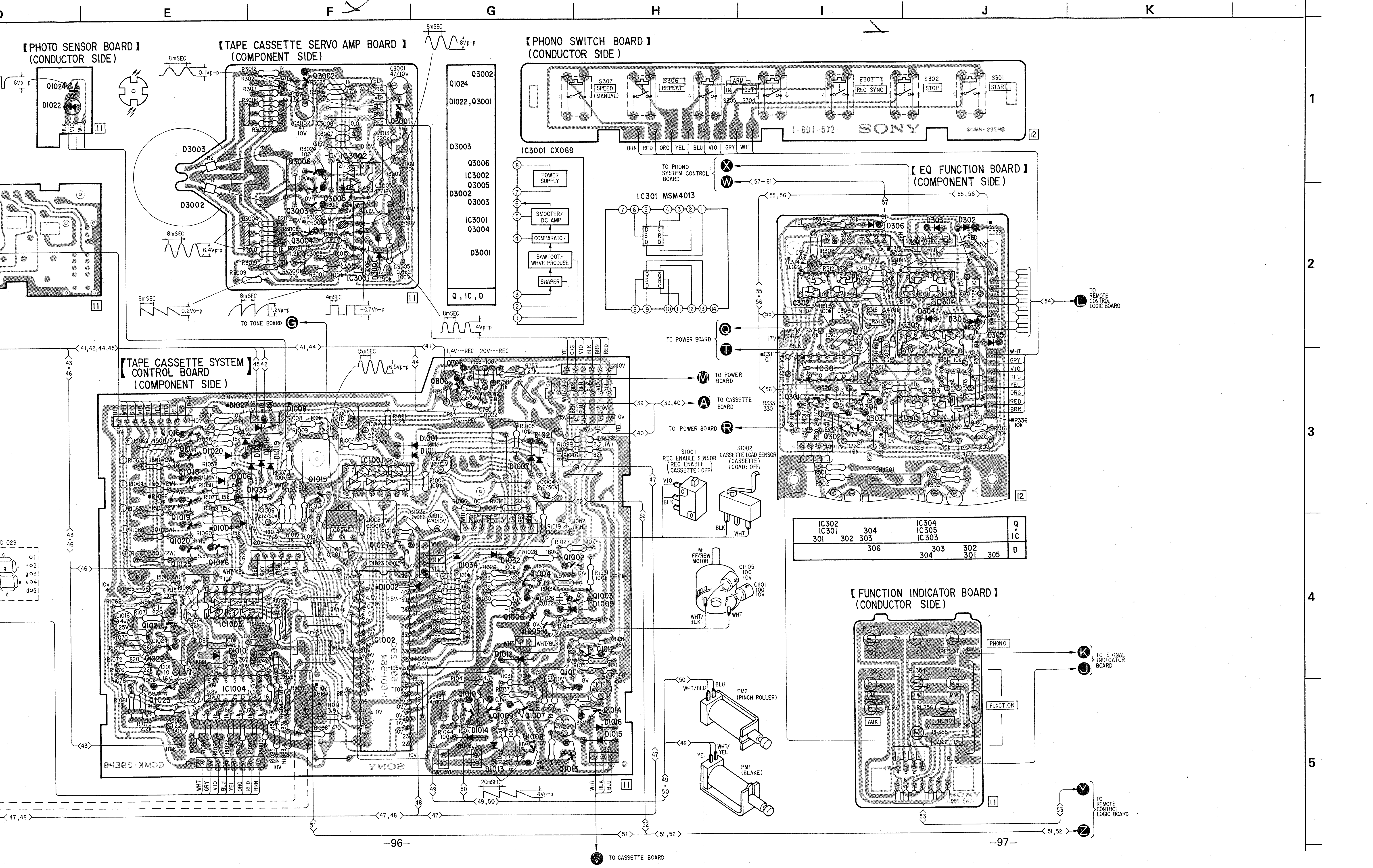

D
E
F
G
H
I
J
K
1
2
3
4
5
TO TONE BOARD
IC1001 TC4049
Q1002, 1003 2SC1364 DC AMP
Q1004 2SA952 DC AMP
Q1005 2SD414 Q1006 2SB548 MOTOR DRIVE
IC1002 μPD547
Q1027 2SC1364 ISS SWITCH
D1009 1S1555
CPU
ROM/RAM
OUTPUT
B PLUNGER
P PLUNGER
KICK
REW MOTOR
FF MOTOR
M FF/REW MOTOR
TO POWER BOARD
Q1008 2SB548 D1012-1014 10E-2
PLUNGER DRIVE
Q1007 2SC1364
Q1009, 1010 2SC1475 PLUNGER DRIVE
PM2 (PINCH ROLLER)
PM1 (BLAKE)
D1017, 1019 1S1555
IC1003
D1007, 1021 1S1555
D1015, 1016 10E-2
CASSETTE BOARD
【TIMING BOARD】
Q1030, 1031 2SC1364 DELAY
Q1011, 1012 2SC1364 DC AMP
Q1013, 1014 2SC1475 PLUNGER DRIVE (REC/PB)
METER OUT
TO CASSETTE BOARD
IC1004 MSM5953 DECODER/COUNTER
D1010 1S1555
COUNTER
INPUT 7 SEGMENT DECORDER
D1029 GL9N03D
【AMS BOARD】
【TAPE CASSETTE SERVO AMP BOARD】
IC3001 CX069 SERVO AMP
D3001 HZ6B1L
Q3001, 3002 2SC634
IC3002 μPC4558 COMPARATOR
Q3003, 3005 2SD809
Q3004 2SB731
Q3006 2SB731
MOTOR DRIVE
POWER SUPPLY
SHAPER
SAWTOOTH WAVE PRODUCE
COMPARATOR
SMOOTHER/DC AMP
TAPE SPEED
HI GAIN
H2 GAIN
CAPSTAN MOTOR
【PHONO SWITCH BOARD】
S307 SPEED (MANUAL)
S306 REPEAT
S305 IN
ARM
S304 OUT
S303 REC SYNC
S302 STOP
S301 START
【EQ FUNCTION BOARD】
IC303 MSM4011
IC302 MSM4001
IC304 MSM4081
IC305 MSM4049
IC301 MSM4013
D301 1S1555
D305 1S1555
D302 1S1555
D303, 304 1S1555
D306 1S1555
STOP
KEY IN
START
IN
OUT
TO REMOTE CONTROL LOGIC BOARD
【FUNCTION INDICATOR BOARD】
LP352
PL351
PL350
PHONO
REPEAT
Q301-304 2SC1364 LAMP DRIVE
TO POWER BOARD
REC SYNC
ASS-25
CT STOP
SPEED
REPEAT
TO PHONO SYSTEM CONTROL BOARD
TO REMOTE CONTROL LOGIC BOARD
TO PHONO SERVO AMP BOARD

4-15. MOUNTING DIAGRAM

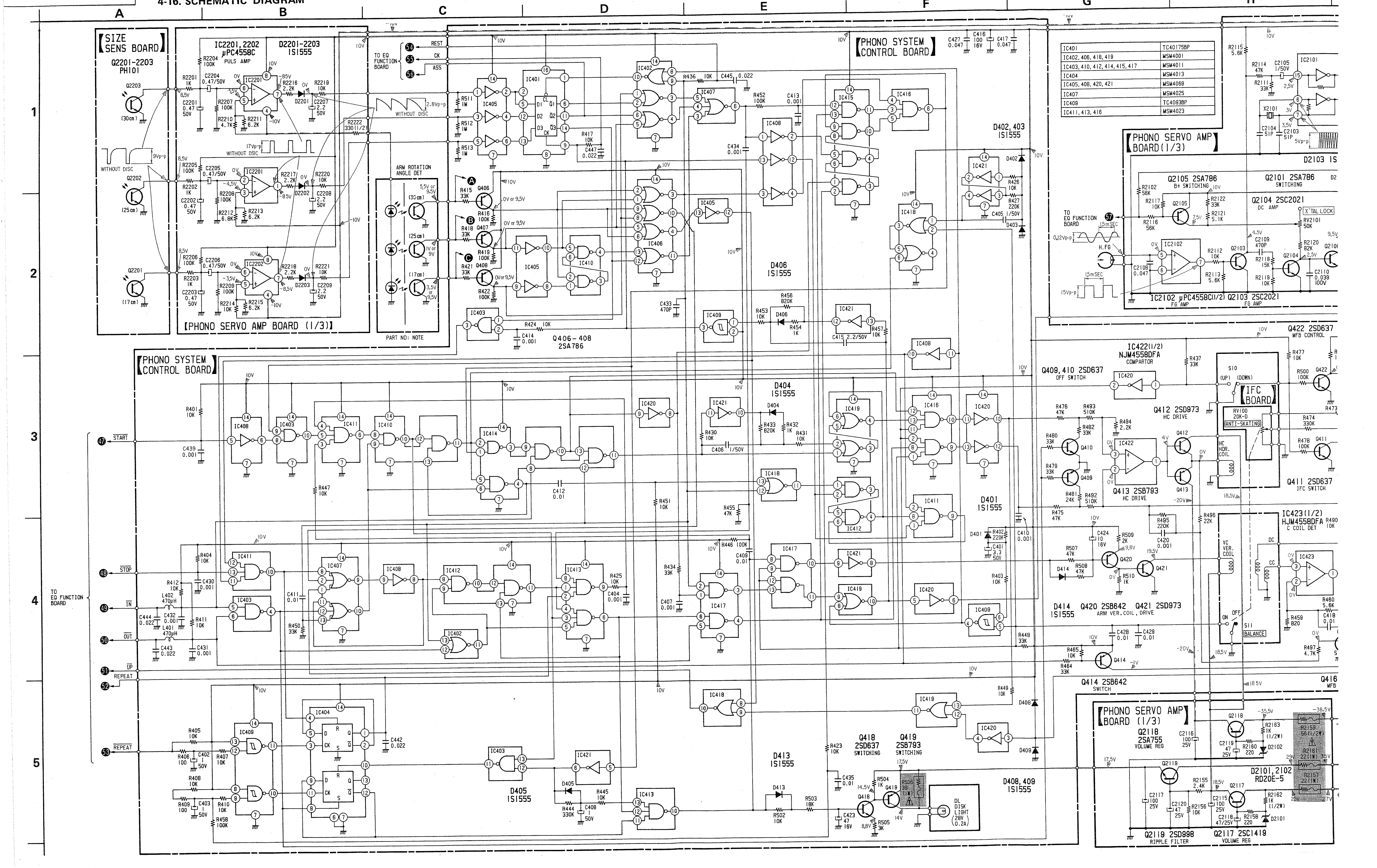

A
B
C
D
E
F
G
H
1
2
3
4
5
【PHOTO SENSOR BOARD】
(CONDUCTOR SIDE)
Q1024
D1022
6Vp-p
【TAPE CASSETTE SERVO AMP BOARD】
(COMPONENT SIDE)
8mSEC
0.1Vp-p
8Vp-p
6.4Vp-p
D3003
D3002
IC3001
IC3002
【PHONO SWITCH BOARD】
(CONDUCTOR SIDE)
S307 SPEED (MANUAL)
S306 REPEAT
ARM IN
S305
BRN RED ORG YEL BLU VIO GRY WHT
TO PHONO SYSTEM CONTROL BOARD
IC3001 CX069
POWER SUPPLY
SMOOTER/DC AMP
COMPARATOR
SAWTOOTH WHVE PRODUSE
SHAPER
IC301 MSM4013
【FUNCTION DISPLAY BOARD】
(CONDUCTOR SIDE)
1-601-562-
SONY
GCMK-29EHB
REC
(REW)
(FWD)
(FF)
REC MUTE
(PAUSE)
DOLBY NR
TO CASSETTE BOARD
TO TONE BOARD
IC1004 MSM5953
RESET
BORROW OUT
RBI
U/D
DOWN
UP IN
UPIN
INPUT 7 SEGMENT DECORDER
COUNTER
IC1002 μPD547
OSC
SHUT OFF
TIMING
AMS
AMS FWD
B+ RESET
OKO
TIMER REC
TIMER PLAY
MEMORY
INPUT
CPU
ROM/RAM
OUTPUT
KICK
PLUNGER
B PLUNGER
MUT
【AMS BOARD】
(CONDUCTOR SIDE)
D1029
【TIMING BOARD】
(CONDUCTOR SIDE)
Q1030
Q1031
【TAPE CASSETTE SYSTEM CONTROL BOARD】
(COMPONENT SIDE)
IC1001
IC1002
IC1003
IC1004
GCMK-29EHB
SONY
TO POWER BOARD
TO CASSETTE BOARD
S1001 REC ENABLE SENSOR (REC ENABLE / CASSETTE : OFF)
M FF/REW MOTOR
20mSEC
4Vp-p
1.4V---REC
20V---REC

Q , IC	D
706	
806	
	1008
1016	1027
1017	1001
	1020 1011
	1017-1019,1021
	1006 1007
1018 IC1001	
1015	1033
1019	
1020	1004
1027	
1025 1026	1034,1032
1002	
1004	1029 1002
1003	
IC1003 1006	1009
1021 1005	
1022 1012	
IC1002	1010 1012
1023,IC1004,1011	
1030	
1007	
1010,1009, 1014	
	1016
	1014 1015
1031	1009
1008	
1013	1013

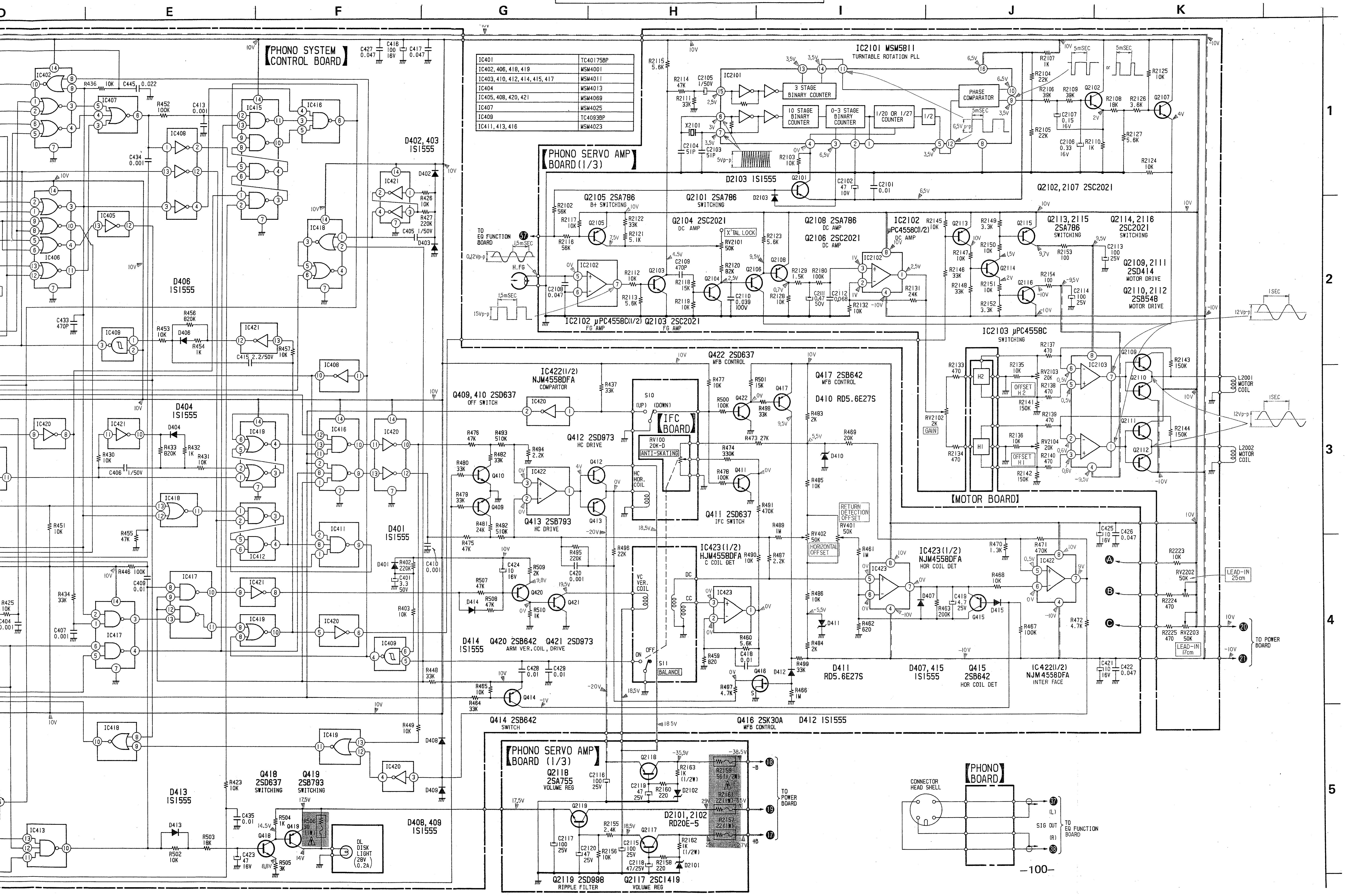
Q , IC , D
Q3002
Q1024
D1022, Q3001
D3003
Q3006
IC3002
Q3005
D3002
Q3003
IC3001
Q3004
D3001


D
E
F
G
H
I
J
K
1
2
3
4
5
【PHOTO SENSOR BOARD】 (CONDUCTOR SIDE)
【TAPE CASSETTE SERVO AMP BOARD】 (COMPONENT SIDE)
【PHONO SWITCH BOARD】 (CONDUCTOR SIDE)
【EQ FUNCTION BOARD】 (COMPONENT SIDE)
【TAPE CASSETTE SYSTEM CONTROL BOARD】 (COMPONENT SIDE)
【FUNCTION INDICATOR BOARD】 (CONDUCTOR SIDE)
IC3001 CX069
POWER SUPPLY
SMOOTER/ DC AMP
COMPARATOR
SAWTOOTH WHVE PRODUSE
SHAPER
IC301 MSM4013
S307 SPEED (MANUAL)
S306 REPEAT
ARM IN OUT
S305 S304
S303 REC SYNC
S302 STOP
S301 START
1-601-572-
SONY
TO PHONO SYSTEM CONTROL BOARD
TO REMOTE CONTROL LOGIC BOARD
TO POWER BOARD
TO CASSETTE BOARD
TO TONE BOARD
TO SIGNAL INDICATOR BOARD
S1001 REC ENABLE SENSOR (REC ENABLE (CASSETTE : OFF)
S1002 CASSETTE LOAD SENSOR (CASSETTE) (COAD: OFF)
M FF/REW MOTOR
PM2 (PINCH ROLLER)
PM1 (BLAKE)
PHONO
FUNCTION
REPEAT
FM
LW
MW
AUX
PHONO
CASSETTE
GCMK-29EHB
Q3002 Q1024 D1022,Q3001 D3003 Q3006 IC3002 Q3005 D3002 Q3003 IC3001 Q3004 D3001
Q , IC , D
IC302 IC301 301 302 303 304 IC304 IC305 IC303 Q • IC
306 303 304 302 301 305 D
8mSEC
0.1Vp-p
6.4Vp-p
0.2Vp-p
1.2Vp-p
0.7Vp-p
4Vp-p
6.5Vp-p
20mSEC
8Vp-p

4-16. SCHEMATIC DIAGRAM


A
B
C
D
E
F
G
H
1
2
3
4
5
SIZE SENS BOARD
Q2201-2203 PH101
Q2203 (30cm)
Q2202 (25cm)
Q2201 (17cm)
WITHOUT DISC
IC2201, 2202 μPC4558C PULS AMP
D2201-2203 1S1555
PHONO SERVO AMP BOARD (1/3)
TO EQ FUNCTION BOARD
REST
CK
ASS
WITHOUT DISC
2.8Vp-p
17Vp-p
ARM ROTATION ANGLE DET
PART NO: NOTE
Q406-408 2SA786
PHONO SYSTEM CONTROL BOARD
D402, 403 1S1555
D406 1S1555
D404 1S1555
D401 1S1555
D405 1S1555
D413 1S1555
D408, 409 1S1555
D414 1S1555
Q418 2SD637 SWITCHING
Q419 2SB793 SWITCHING
DL DISC LIGHT (28V 0.2A)
START
STOP
IN
OUT
UP
REPEAT
REPEAT
TO EQ FUNCTION BOARD
TO EQ FUNCTION BOARD
1.5mSEC
0.12Vp-p
H.FG
15Vp-p
IC2102 μPC4558C(1/2) FG AMP
Q2103 2SC2021 FG AMP
Q2105 2SA786 B+ SWITCHING
Q2101 2SA786 SWITCHING
Q2104 2SC2021 DC AMP
X'TAL LOCK
IC422(1/2) NJM4558DFA COMPARTOR
Q409, 410 2SD637 OFF SWITCH
Q422 2SD637 MFB CONTROL
Q412 2SD973 HC DRIVE
Q413 2SB793 HC DRIVE
Q411 2SD637 IFC SWITCH
IFC BOARD
RV100 20K-D ANTI-SKATING
S10 (UP) (DOWN)
HC HOR. COIL
VC VER. COIL
IC423(1/2) HJM4558DFA C COIL DET
Q420 2SB642 Q421 2SD973 ARM VER. COIL, DRIVE
S11 BALANCE
Q414 2SB642 SWITCH
Q416 MFB
Q2118 2SA755 VOLUME REG
D2101, 2102 RD20E-5
Q2119 2SD998 RIPPLE FILTER
Q2117 2SC1419 VOLUME REG

IC401	TC40175BP
IC402, 406, 418, 419	MSM4001
IC403, 410, 412, 414, 415, 417	MSM4011
IC404	MSM4013
IC405, 408, 420, 421	MSM4069
IC407	MSM4025
IC409	TC4093BP
IC411, 413, 416	MSM4023

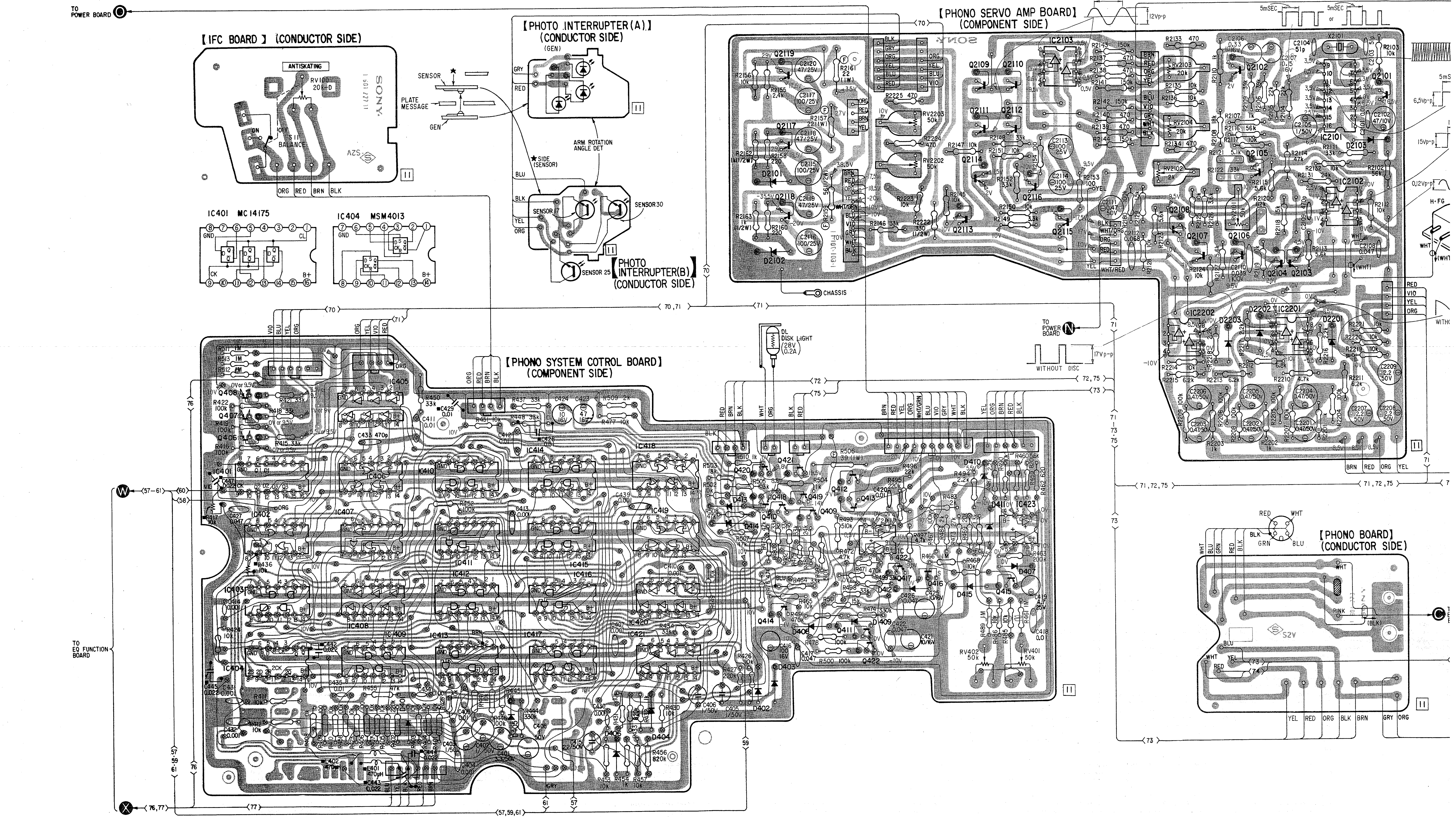


IC401	TC40175BP
IC402, 406, 418, 419	MSM4001
IC403, 410, 412, 414, 415, 417	MSM4011
IC404	MSM4013
IC405, 408, 420, 421	MSM4069
IC407	MSM4025
IC409	TC4093BP
IC411, 413, 416	MSM4023

D
E
F
G
H
I
J
K
1
2
3
4
5
【PHONO SYSTEM CONTROL BOARD】
【PHONO SERVO AMP BOARD (1/3)】
【MOTOR BOARD】
【IFC BOARD】
【PHONO BOARD】
IC2101 MSM5811
TURNTABLE ROTATION PLL
3 STAGE BINARY COUNTER
10 STAGE BINARY COUNTER
0-3 STAGE BINARY COUNTER
1/20 OR 1/27 COUNTER
1/2
PHASE COMPARATOR
X2101
5mSEC
or
D2103 1S1555
Q2102, 2107 2SC2021
Q2105 2SA786 B+ SWITCHING
Q2101 2SA786 SWITCHING
Q2104 2SC2021 DC AMP
X'TAL LOCK
Q2108 2SA786 DC AMP
Q2106 2SC2021 DC AMP
IC2102 μPC4558C(1/2) DC AMP
Q2113, 2115 2SA786 SWITCHING
Q2114, 2116 2SC2021 SWITCHING
Q2109, 2111 2SD414 MOTOR DRIVE
Q2110, 2112 2SB548 MOTOR DRIVE
TO EQ FUNCTION BOARD
57
0.2Vp-p
H.FG
15Vp-p
1.5mSEC
IC2102 μPC4558C(1/2) FG AMP
Q2103 2SC2021 FG AMP
IC2103 μPC4558C SWITCHING
H2
H1
OFFSET H2
OFFSET H1
GAIN
L2001 MOTOR COIL
L2002 MOTOR COIL
1SEC
12Vp-p
D402, 403 1S1555
D406 1S1555
D404 1S1555
D401 1S1555
D413 1S1555
IC422(1/2) NJM4558DFA COMPARTOR
Q409, 410 2SD637 OFF SWITCH
Q422 2SD637 MFB CONTROL
Q417 2SB642 MFB CONTROL
D410 RD5.6E27S
S10 (UP) (DOWN)
RV100 20K-D ANTI-SKATING
Q412 2SD973 HC DRIVE
HC HOR. COIL
Q411 2SD637 IFC SWITCH
Q413 2SB793 HC DRIVE
RETURN DETECTION OFFSET
HORIZONTAL OFFSET
IC423(1/2) HJM4558DFA C COIL DET
IC423(1/2) NJM4558DFA HOR COIL DET
VC VER. COIL
DC
CC
S11 BALANCE
ON OFF
D414 1S1555
Q420 2SB642 ARM VER. COIL. DRIVE
Q421 2SD973
D411 RD5.6E27S
D407, 415 1S1555
Q415 2SB642 HOR COIL DET
IC422(1/2) NJM4558DFA INTER FACE
LEAD-IN 25cm
LEAD-IN 17cm
A
B
C
20
21
TO POWER BOARD
Q414 2SB642 SWITCH
Q416 2SK30A MFB CONTROL
D412 1S1555
Q418 2SD637 SWITCHING
Q419 2SB793 SWITCHING
DL DISK LIGHT (28V 0.2A)
D408, 409 1S1555
Q2118 2SA755 VOLUME REG
Q2119 2SD998 RIPPLE FILTER
Q2117 2SC1419 VOLUME REG
D2101, 2102 RD20E-5
18
19
17
-B
+B
TO POWER BOARD
CONNECTOR HEAD SHELL
37
38
(L)
(R)
SIG OUT
TO EQ FUNCTION BOARD

4-17. MOUNTING DIAGRAM

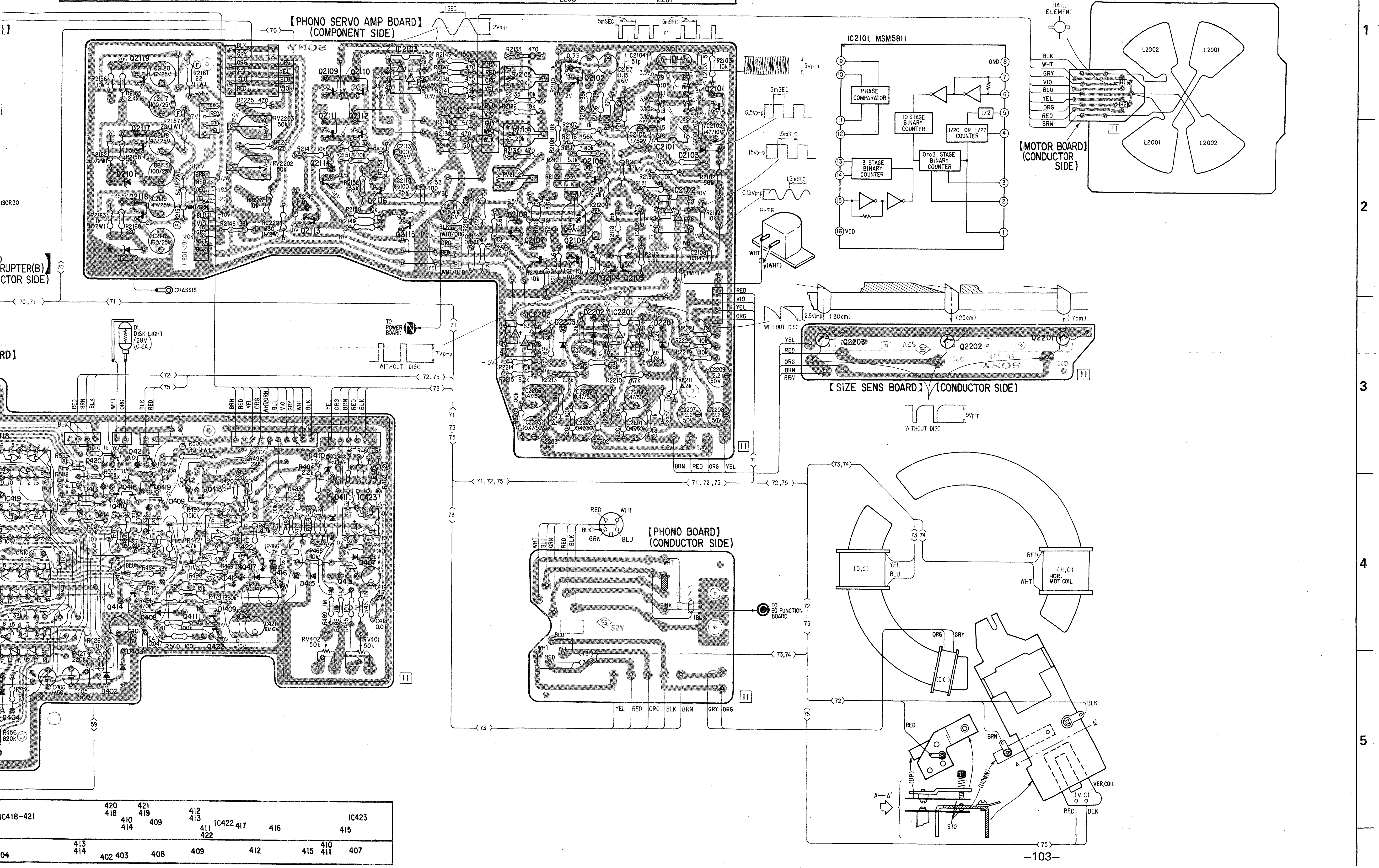
Q, IC / D	E	F	G	H
Q, IC	2117–2119	2109 2111 2113 2110 2112 2114 2116 IC2103 2115	2108 2107 IC2202 2102 2105 2106	2104 2103 IC2201 IC2101 IC2102 2101 2103
D	2101 2102		2203 2202	2201


TO POWER BOARD
【IFC BOARD】(CONDUCTOR SIDE)
ANTISKATING
RV100 20k-D
ON OFF S111 BALANCE
SONY
ORG RED BRN BLK
IC401 MC14175
IC404 MSM4013
【PHOTO INTERRUPTER(A)】(CONDUCTOR SIDE)
(GEN)
SENSOR
PLATE MESSAGE
GEN
GRY
RED
ARM ROTATION ANGLE DET
★SIDE (SENSOR)
BLU
BLK
YEL
ORG
SENSOR 27
SENSOR 30
SENSOR 25
【PHOTO INTERRUPTER(B)】(CONDUCTOR SIDE)
【PHONO SERVO AMP BOARD】(COMPONENT SIDE)
1 SEC
12Vp-p
5mSEC
or
6.5Vp-p
15Vp-p
0.12Vp-p
H·FG
CHASSIS
TO POWER BOARD
17Vp-p
WITHOUT DISC
DL DISK LIGHT (28V 0.2A)
【PHONO SYSTEM COTROL BOARD】(COMPONENT SIDE)
TO EQ FUNCTION BOARD
【PHONO BOARD】(CONDUCTOR SIDE)
RED WHT BLK GRN BLU
WHT BLU GRN RED BLK
PINK
(BLK)
YEL RED ORG BLK BRN GRY ORG
70
71
72
73
75
70, 71
72, 75
71, 72, 75
57–61
60
58
57 59 61
76
76, 77
77
57, 59, 61
61
57
59

Q, IC / D	B	C	D	E	F
Q, IC	406–408 IC401–404	IC405–409 IC410–413	IC414–417 IC418–421	420 418 410 414 421 419 409 412 413 411 422	IC422 417 416 IC423 415
D		401 405	406 404	413 414 402 403 408 409	412 415 410 411 407

RECORD PLAYER

	E	F	G	H
Q, IC	2117-2119	2109 2111 2113 2114 2110 2112 2116 IC2103 2115	2108 IC2202 2107 2106 2102 2105	2104 2103 IC2201 IC2101 IC2102 2101
D	2101 2102		2203 2202	2201 2103



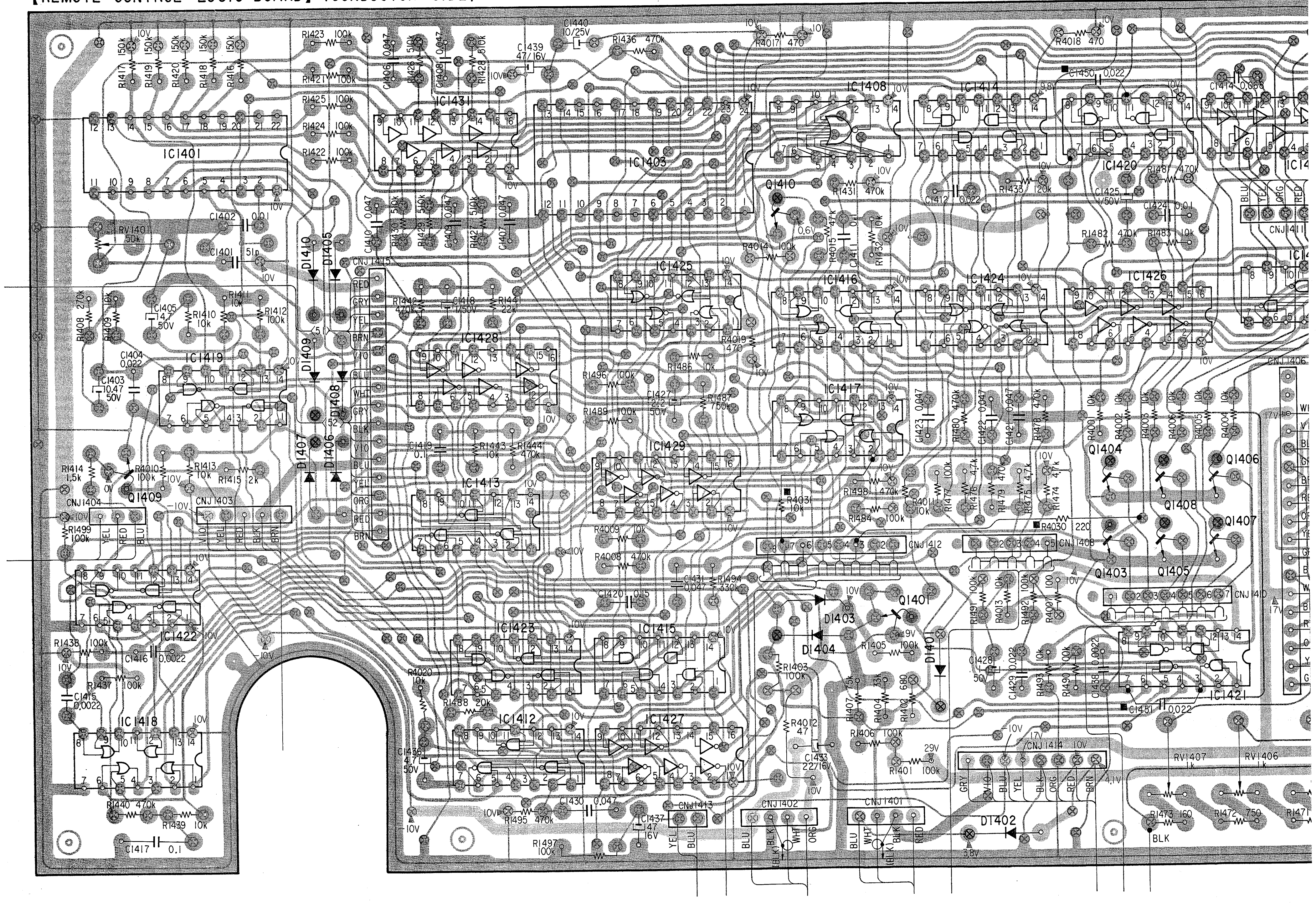
【PHONO SERVO AMP BOARD】
(COMPONENT SIDE)
1 SEC
12Vp-p
5mSEC
5Vp-p
6.5Vp-p
1.5mSEC
15Vp-p
0.12Vp-p
IC2101 MSM5811
PHASE COMPARATOR
10 STAGE BINARY COUNTER
3 STAGE BINARY COUNTER
1/2
1/20 OR 1/27 COUNTER
0 to 3 STAGE BINARY COUNTER
GND
VDD
H·FG
HALL ELEMENT
MOTOR
L2001
L2002
【MOTOR BOARD】
(CONDUCTOR SIDE)
CHASSIS
TO POWER BOARD
WITHOUT DISC
17Vp-p
2.8Vp-p
9Vp-p
(30cm)
(25cm)
(17cm)
【SIZE SENS BOARD】 (CONDUCTOR SIDE)
DL DISK LIGHT (28V 0.2A)
【PHONO BOARD】
(CONDUCTOR SIDE)
TO EQ FUNCTION BOARD
(D,C)
(H,C)
HOR. MOT COIL
(C,C)
(V,C)
VER.COIL
(UP)
(DOWN)
A—A'
S10

IC418-421	420 418	421 419 410 414	409	412 413 411 422	IC422 417	416	IC423 415		
04	413 414	402 403	408	409	412	415	410 411	407	

4-18. MOUNTING DIAGRAM

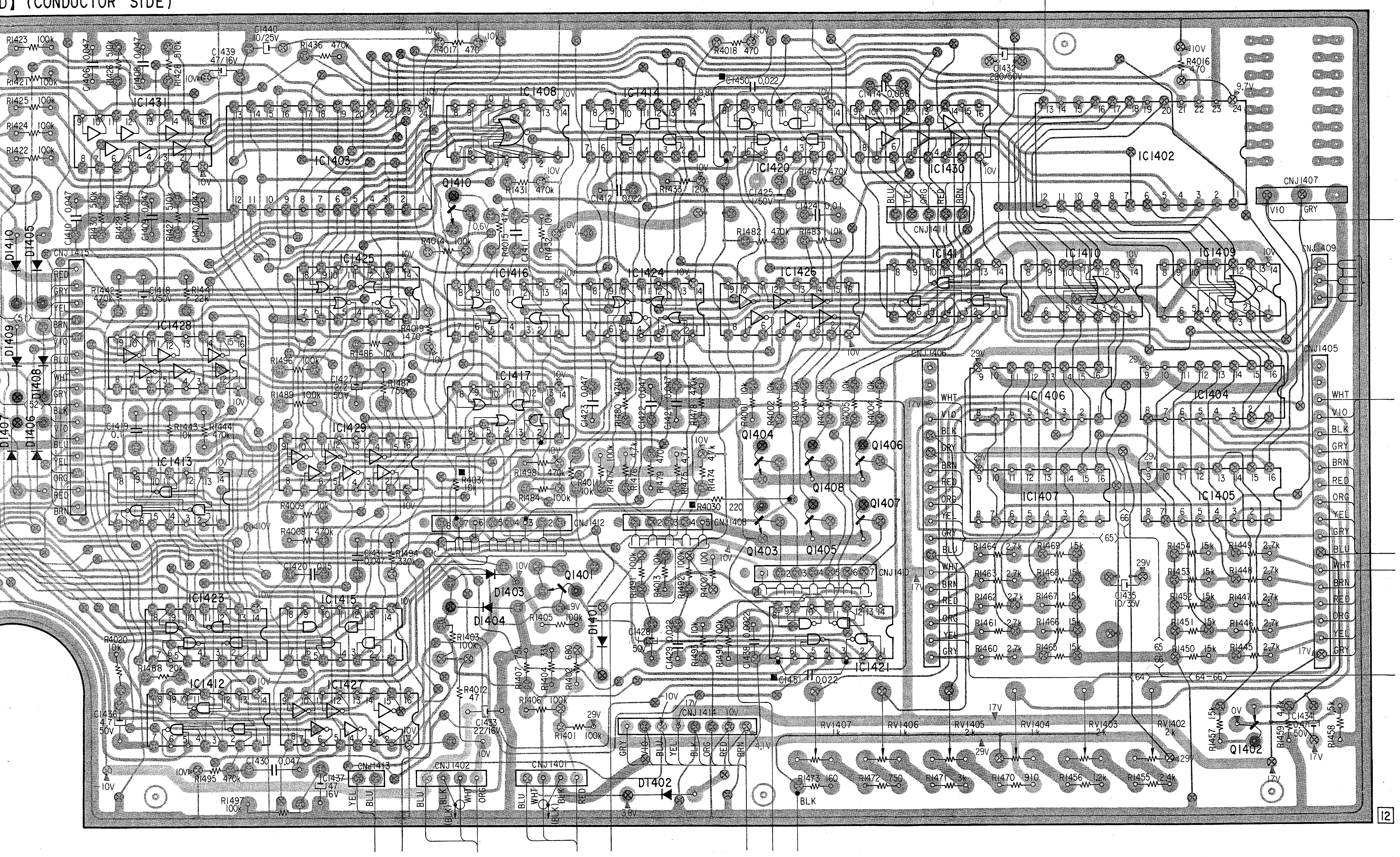
	A	B	C	D	E	F	G
Q·IC		1409 IC1422 IC1418 IC1401 IC1419	IC1431 IC1428 IC1413	IC1423 IC1412 IC1403 IC1425 IC1429 IC1415 IC1427	1410 IC1408 IC1416 IC1417 1401	IC1414 IC1424 1404 1403 IC1420 IC1426 1408 1405 IC1421	1406 1407 IC1430 IC141
D			1410 1405 1409 1408 1407 1406		1403 1404 1401	1402	

【REMOTE CONTROL LOGIC BOARD】(CONDUCTOR SIDE)


IC1401
IC1431
IC1403
IC1408
IC1414
IC1420
IC1419
IC1428
IC1425
IC1416
IC1424
IC1426
IC1417
IC1429
IC1413
IC1422
IC1418
IC1423
IC1415
IC1412
IC1427
IC1421
Q1409
Q1410
Q1401
Q1403
Q1404
Q1405
Q1406
Q1407
Q1408
D1401
D1402
D1403
D1404
D1405
D1406
D1407
D1408
D1409
D1410
RV1401 50k
RV1407 1k
RV1406 1k
CNJ1401
CNJ1402
CNJ1403
CNJ1404
CNJ1405
CNJ1406
CNJ1408
CNJ1410
CNJ1411
CNJ1412
CNJ1413
CNJ1414
RED
GRY
YEL
BRN
VIO
BLU
WHT
BLK
ORG

	C	D	E	F	G	H	I	J
	IC1431 IC1428 IC1413 IC1423 IC1412	IC1403 IC1425 IC1429 IC1415 IC1427	1410 IC1408 IC1416 IC1417 1401	IC1414 IC1424 IC1420 IC1426 1404 1403 1408 1405 IC1421	1406 1407 IC1430 IC1411 IC1406 IC1407	IC1410 IC1402 IC1409 IC1404 IC1405 1402		
10 09 07	1405 1408 1406		1403 1404 1401	1402				

D] (CONDUCTOR SIDE)

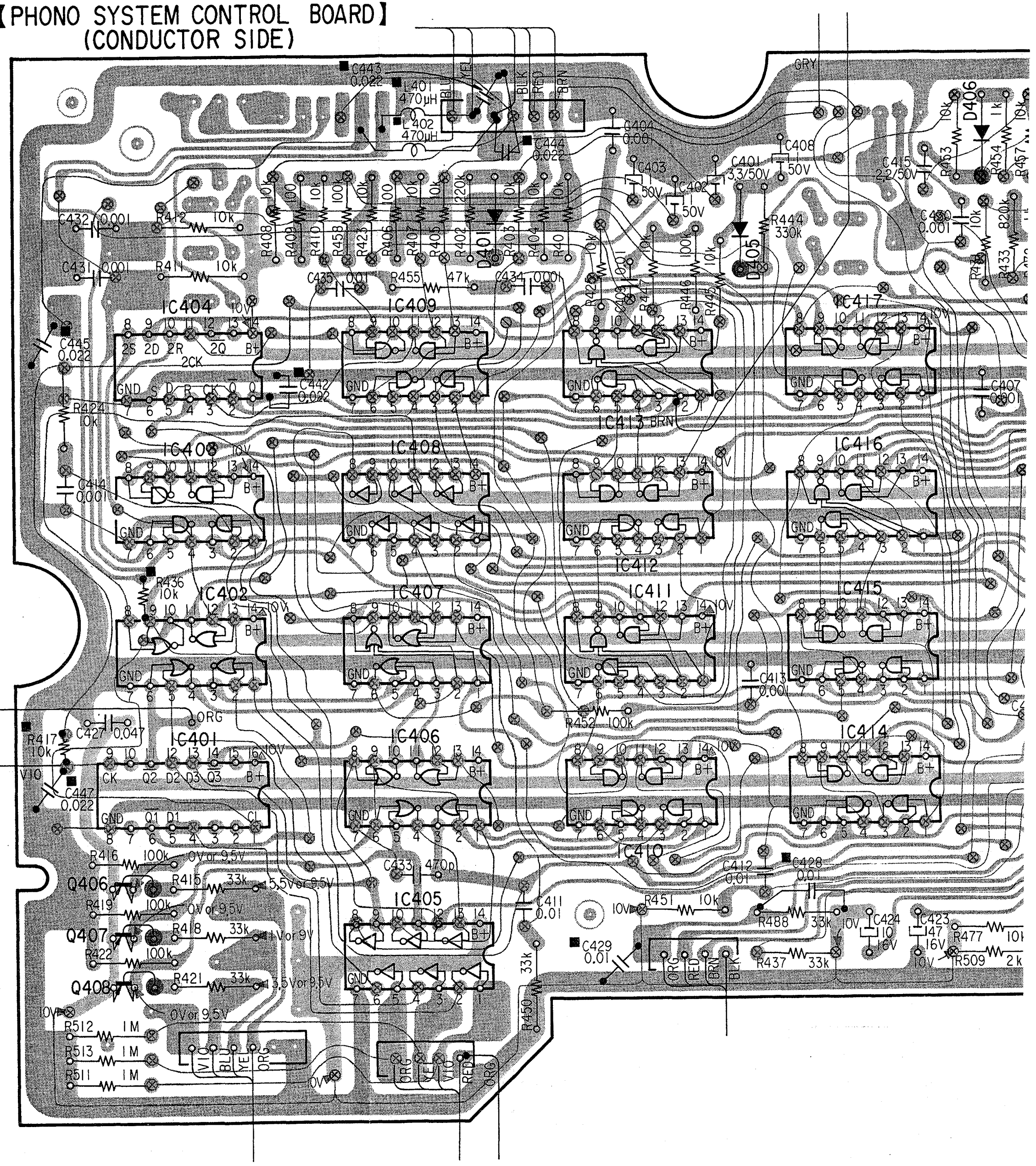

IC1431
IC1428
IC1413
IC1423
IC1412
IC1403
IC1425
IC1429
IC1415
IC1427
IC1408
IC1416
IC1417
IC1414
IC1424
IC1420
IC1426
IC1421
IC1430
IC1411
IC1410
IC1409
IC1402
IC1406
IC1404
IC1407
IC1405
Q1410
Q1404
Q1406
Q1408
Q1407
Q1403
Q1405
Q1401
Q1402
D1410
D1405
D1409
D1408
D1407
D1406
D1403
D1404
D1401
D1402
CNJ1415
CNJ1412
CNJ1408
CNJ1410
CNJ1411
CNJ1407
CNJ1409
CNJ1406
CNJ1405
CNJ1414
CNJ1413
CNJ1402
CNJ1401
RV1407 1k
RV1406 1k
RV1405 2k
RV1404 1k
RV1403 2k
RV1402 2k
C1435 10/35V
C1434 0.47/50V
C1432 220/50V
C1440 10/25V
C1439 47/16V
C1433 22/16V
C1437 47/16V
C1436 4.7/50V
12

1
2
3
4
5

4-19. MOUNTING DIAGRAMS

Q·IC	IC401–404 406–408	IC405–409	IC410–413	IC414–417
D	401		405	406

【PHONO SYSTEM CONTROL BOARD】
(CONDUCTOR SIDE)

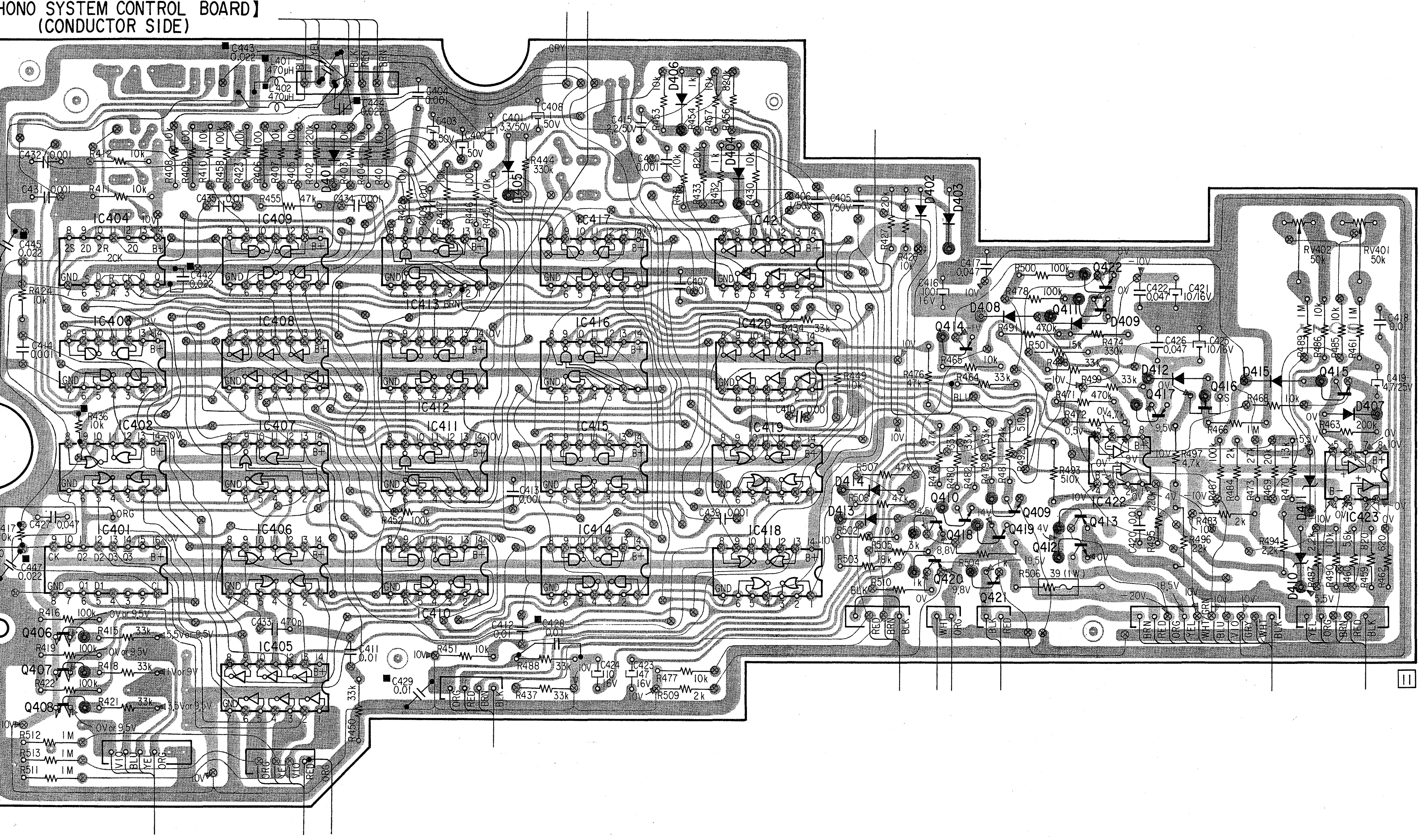

A
B
C
D
1
2
3
4
5
IC401
IC402
IC403
IC404
IC405
IC406
IC407
IC408
IC409
IC410
IC411
IC412
IC413
IC414
IC415
IC416
IC417
Q406
Q407
Q408
D405
D406
GND
B+

B	C	D	E	F	G
IC401-404 406-408 IC405-409	IC410-413	IC414-417 IC418-421	414 410 418 420 409 419 421	422 411 413 412 IC422 417 416	415 IC423
	401 405	406 404	414 413 402 403 408	409 412 415	411 410 407

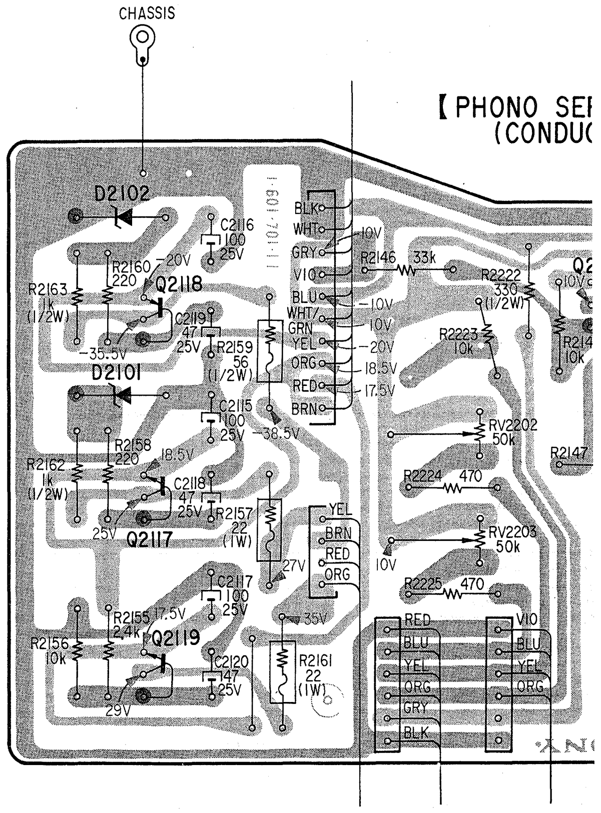
Q · IC · D	H	I
Q · IC	D2102 Q2118	Q2
D	D2101 Q2117 Q2119	

DIAGRAMS

HONO SYSTEM CONTROL BOARD]
(CONDUCTOR SIDE)


IC401
IC402
IC403
IC404
IC405
IC406
IC407
IC408
IC409
IC410
IC411
IC412
IC413
IC414
IC415
IC416
IC417
IC418
IC419
IC420
IC421
IC422
IC423
Q406
Q407
Q408
Q409
Q410
Q411
Q412
Q413
Q414
Q415
Q416
Q417
Q418
Q419
Q420
Q421
Q422
D401
D402
D403
D404
D405
D406
D407
D408
D409
D410
D411
D412
D413
D414
D415
RV401 50k
RV402 50k
GRY
BLK
RED
BRN
YEL
ORG
WHT
BLU
VIO
11

[PHONO SE
(CONDU


CHASSIS
D2101
D2102
Q2117
Q2118
Q2119
RV2202 50k
RV2203 50k
1-601-701-11
BLK
WHT
GRY
VIO
BLU
WHT/GRN
YEL
ORG
RED
BRN

F G H I J K L M

422 417 416 415 IC423

412 415 411 410 407

Q · IC · D

D2102 Q2118 D2101 Q2117 Q2119

Q2113 Q2114 Q2111 Q2109

Q2112 Q2110 Q2116 Q2115 IC2103

IC2202 Q2107 Q2108 D2203 Q2106 Q2105 D2202 Q2104 IC2201 Q2103 Q2102

D2201 IC2102 IC2101 D2103 Q2101

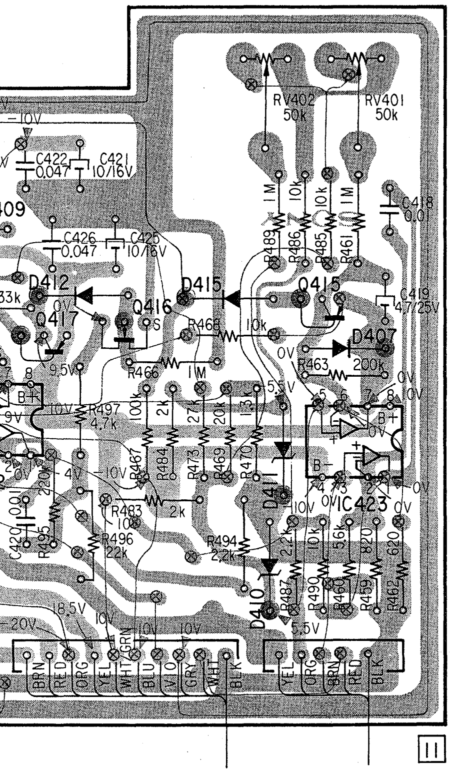
1

2

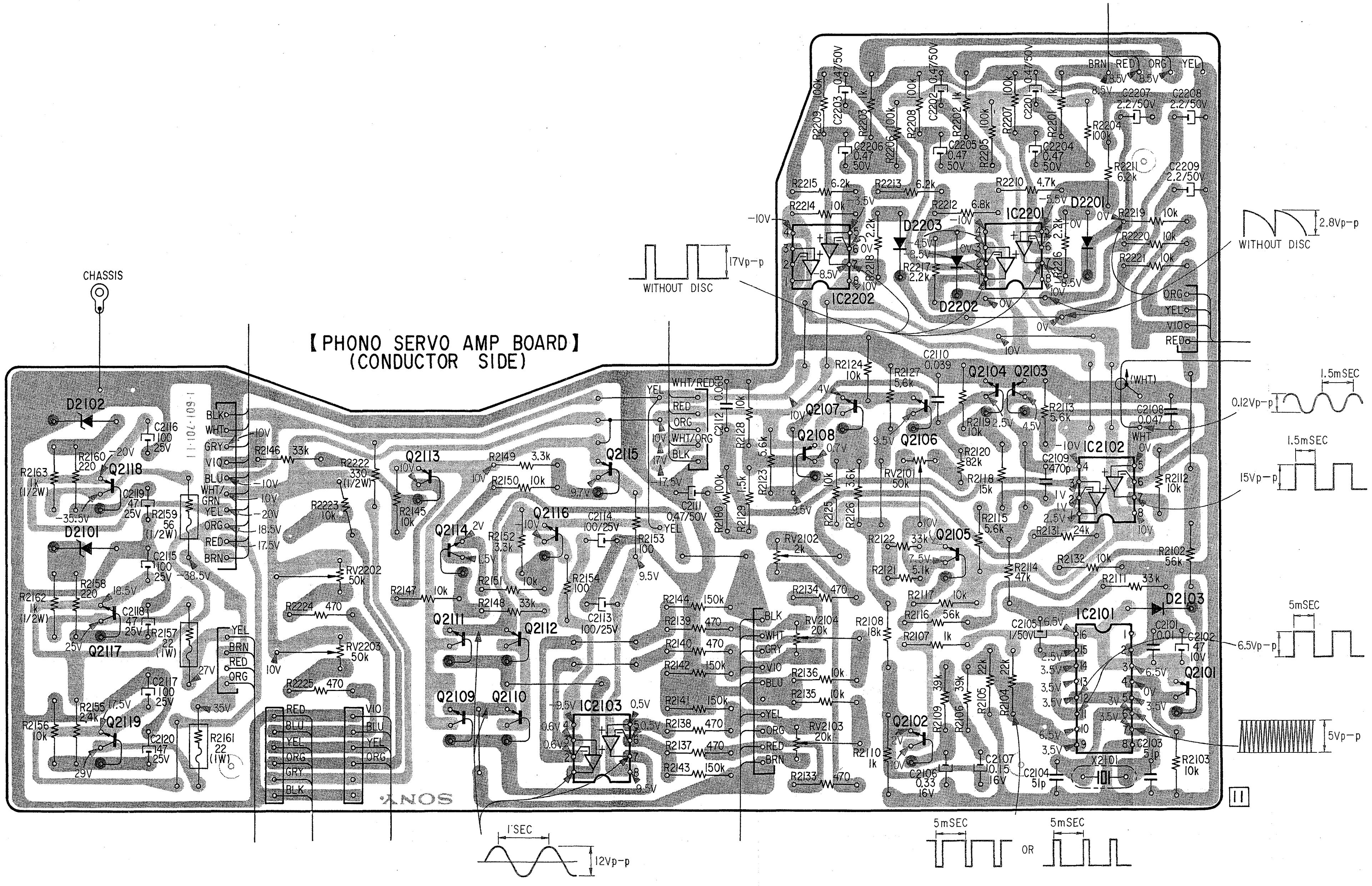
3

4

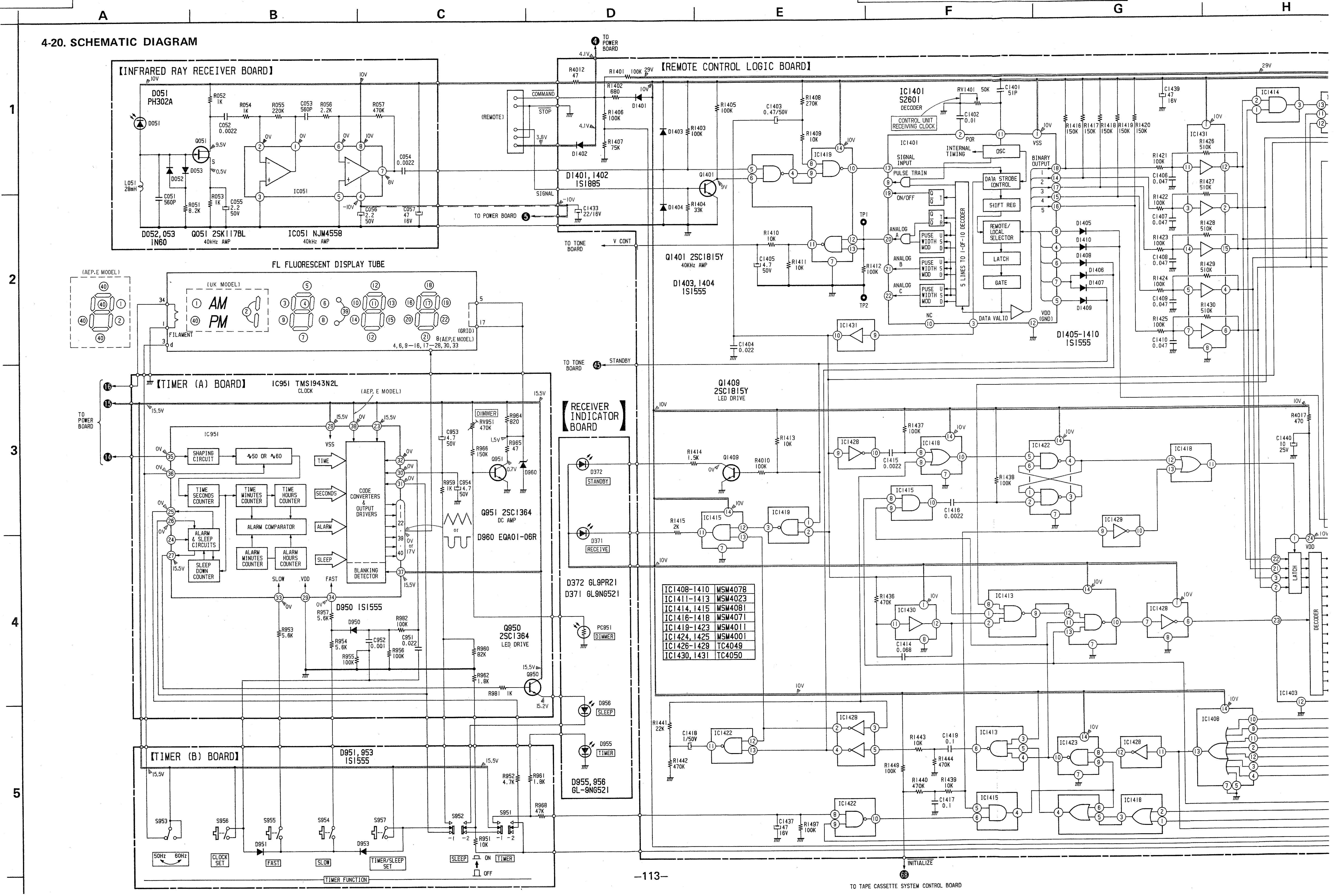
5


RV402 50k
RV401 50k
C422 0.047
C421 10/16V
C426 0.047
C425 10/16V
C418 0.01
C419 4.7/25V
D412
D415
Q416
Q417
Q415
D407
200k
IC423
D410
D411
R468
R466
R463
R497 4.7k
R496 22k
R494 2.2k
R483 10k
BRN
RED
ORG
WHT
BRN
BLU
VIO
GRY
WHT
BLK
YEL
BRN
RED
BLK
II

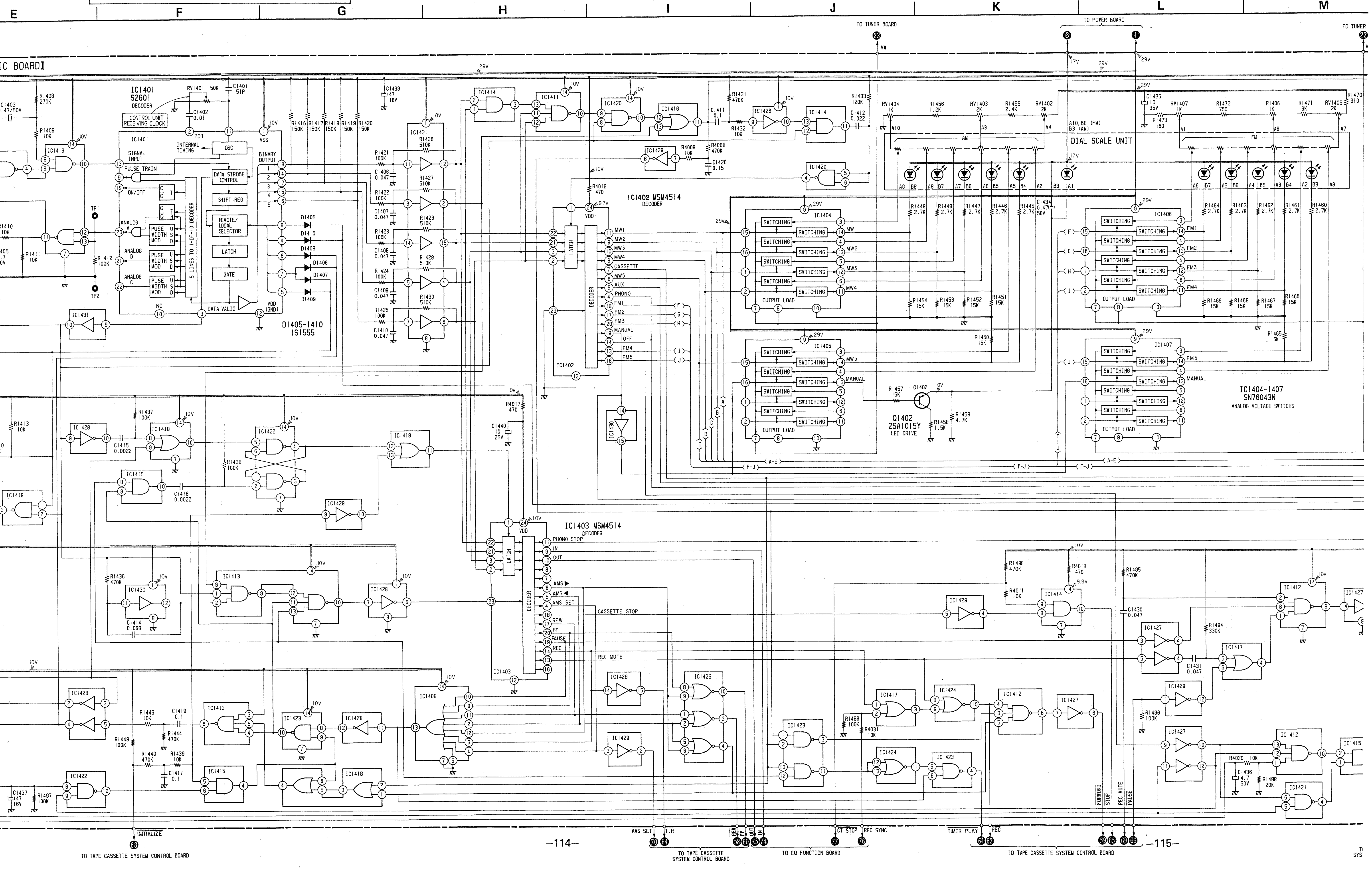
【PHONO SERVO AMP BOARD】 (CONDUCTOR SIDE)

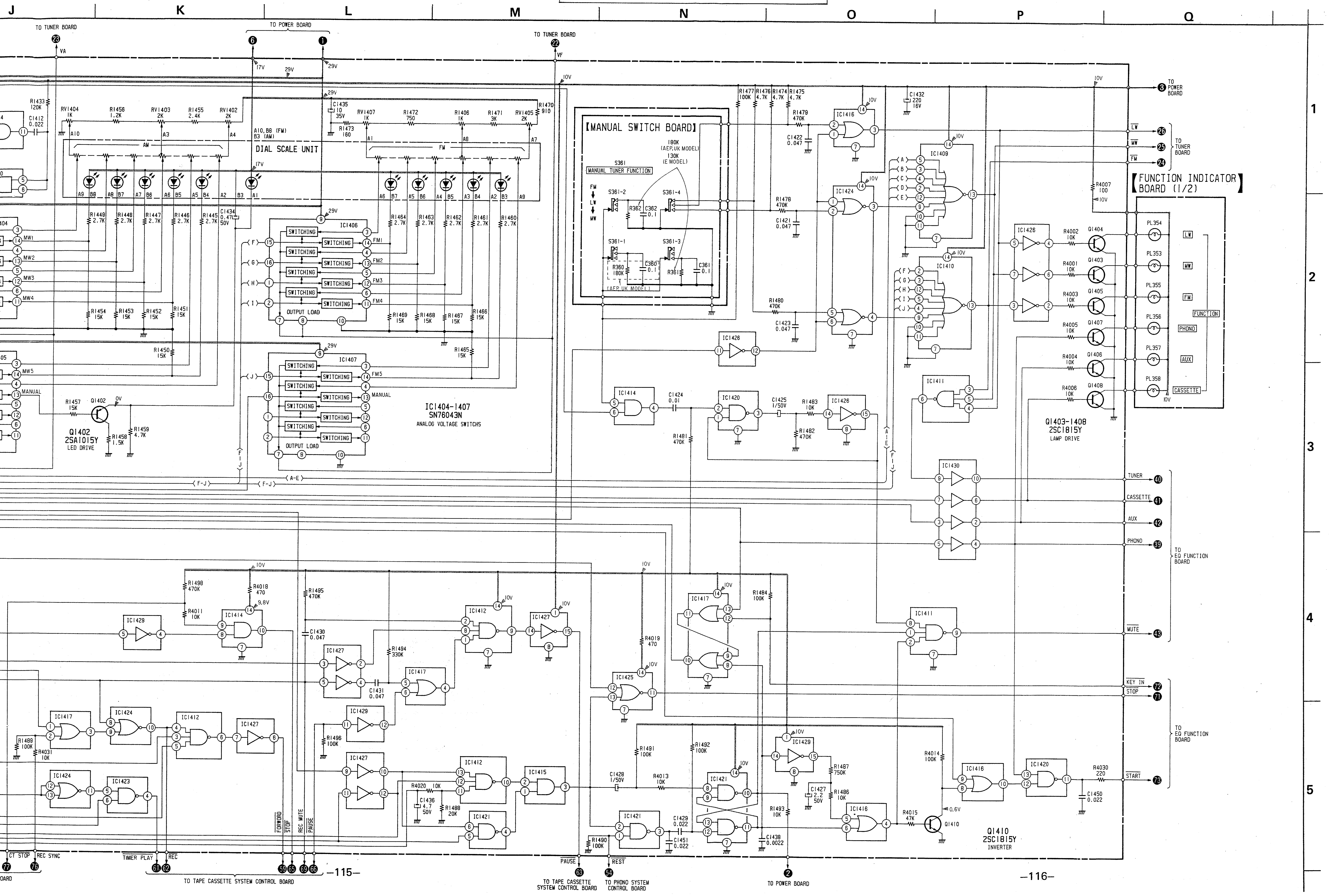

CHASSIS
D2102
D2101
Q2118
Q2117
Q2119
C2116 100 25V
C2119 47 25V
C2115 100 25V
C2118 47 25V
C2117 100 25V
C2120 47 25V
R2163 1k (1/2W)
R2160 220
R2159 56 (1/2W)
R2162 1k (1/2W)
R2158 220
R2157 22 (1W)
R2156 10k
R2155 2.4k
R2161 22 (1W)
-35.5V
-38.5V
29V
35V
27V
1-601-701-11
BLK
WHT
GRY
VIO
BLU
WHT/GRN
YEL
ORG
RED
BRN
-10V
-20V
18.5V
17.5V
R2146 33k
R2222 330 (1/2W)
R2223 10k
RV2202 50k
R2224 470
RV2203 50k
R2225 470
R2147 10k
RED
BLU
YEL
ORG
GRY
BLK
VIO
Q2113
Q2114
Q2111
Q2109
Q2110
Q2112
Q2116
Q2115
R2145 10k
R2149 3.3k
R2150 10k
R2152 3.3k
R2151
R2148 33k
R2154 100
R2153 100
C2114 100/25V
C2113 100/25V
C2111 0.47/50V
IC2103
YEL
WHT/RED
RED
ORG
WHT/ORG
BLK
C2112 0.068
R2128 10k
R2123 5.6k
R2180 100k
R2129 15k
R2144 150k
R2139 470
R2140 470
R2142 150k
R2141 150k
R2138 470
R2137 470
R2143 150k
RV2104 20k
R2136 10k
R2135 10k
RV2103 20k
R2133 470
R2134 470
RV2102 2k
R2108 18k
R2110 1k
IC2202
IC2201
D2203
D2202
D2201
Q2107
Q2108
Q2106
Q2104
Q2103
Q2105
Q2102
R2124 10k
R2127 5.6k
C2110 0.039
R2119 10k
R2120 82k
R2118 15k
R2113 5.6k
RV2101 50k
R2115 5.6k
R2131 24k
R2122 33k
R2121
R2114 47k
R2132 10k
R2111 33k
R2117 10k
R2116 56k
R2107 1k
R2109 39k
R2106 39k
R2105 22k
R2104 22k
IC2102
C2109 470p
C2108 0.047
R2112 10k
R2102 56k
IC2101
D2103
Q2101
C2101 0.01
C2102 47 10V
C2105 1/50V
C2106 0.33 16V
C2107 0.15 16V
C2104 51p
C2103 51p
X2101
R2103 10k
R2209 100k
C2203 0.47/50V
R2215 6.2k
R2214 10k
R2213 6.2k
R2212 6.8k
R2217 2.2k
R2218 2.2k
R2210 4.7k
R2211 6.2k
C2206 0.47 50V
C2205 0.47 50V
C2204 0.47 50V
C2207 2.2/50V
C2208 2.2/50V
C2209 2.2/50V
R2204 100k
R2219 10k
R2220 10k
R2221 10k
BRN
RED
ORG
YEL
ORG
YEL
VIO
RED
(WHT)
WHT
II
SONY
-10V
17Vp-p
WITHOUT DISC
2.8Vp-p
WITHOUT DISC
1.5mSEC
0.12Vp-p
1.5mSEC
15Vp-p
5mSEC
6.5Vp-p
5Vp-p
1'SEC
12Vp-p
5mSEC
OR
5mSEC

4-20. SCHEMATIC DIAGRAM

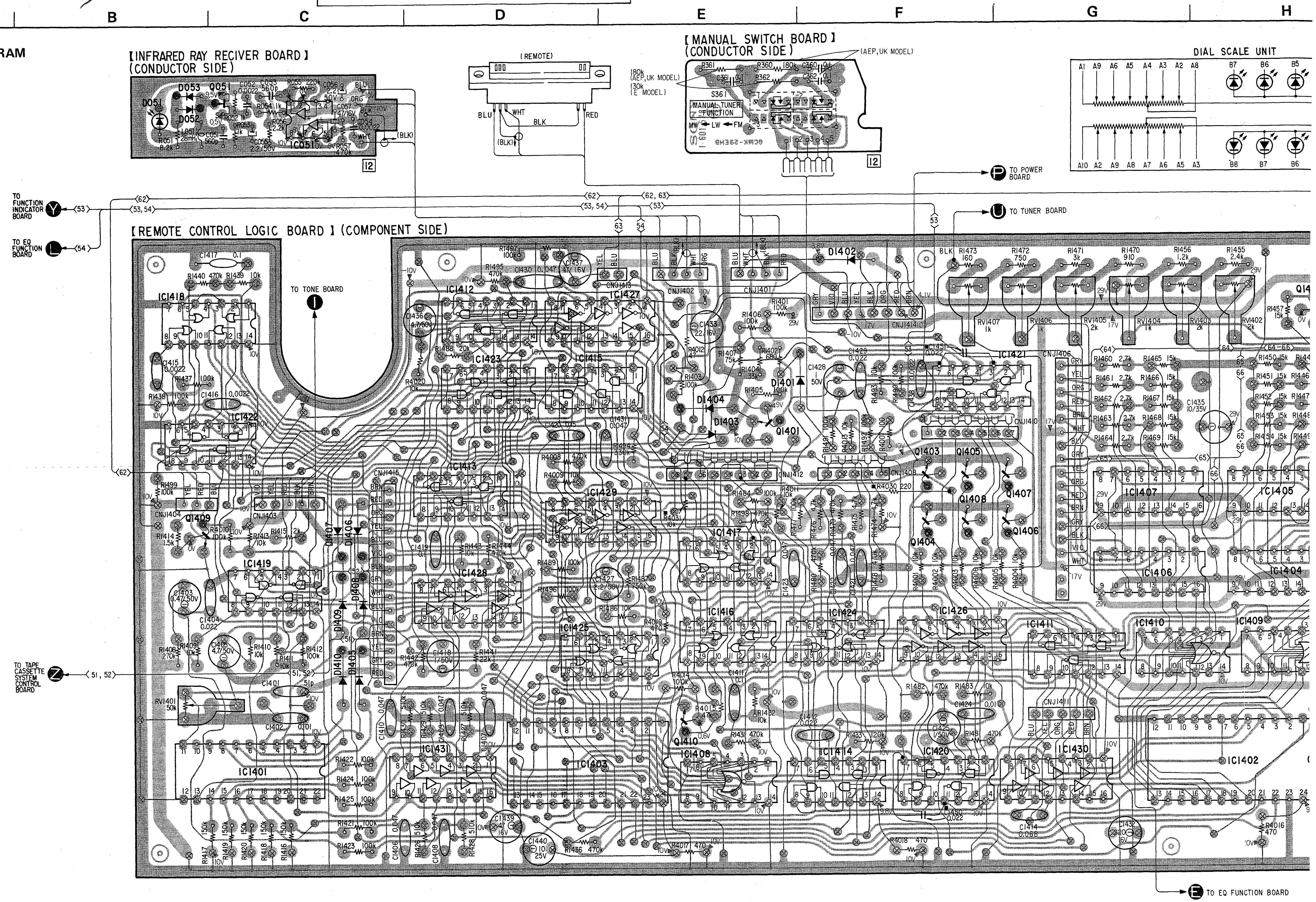

A
B
C
D
E
F
G
H
1
2
3
4
5
【INFRARED RAY RECEIVER BOARD】
D051 PH302A
Q051
IC051
L051 28mH
C051 560P
R051 8.2K
R052 1K
R053 1K
R054 1K
R055 220K
R056 2.2K
R057 470K
C052 0.0022
C053 560P
C054 0.0022
C055 2.2 50V
C056 2.2 50V
C057 47 16V
D052, 053 1N60
Q051 2SK117BL 40kHz AMP
IC051 NJM4558 40kHz AMP
TO POWER BOARD ④
TO POWER BOARD ⑤
【REMOTE CONTROL LOGIC BOARD】
(REMOTE)
COMMAND
STOP
SIGNAL
R4012 47
R1401 100K
R1402 680
R1406 100K
R1407 75K
D1401
D1402
D1401, 1402 1S1885
C1433 22/16V
IC1401 S2601 DECODER
CONTROL UNIT RECEIVING CLOCK
RV1401 50K
C1401 51P
C1402 0.01
POR
INTERNAL TIMING
OSC
SIGNAL INPUT
PULSE TRAIN
ON/OFF
DATA STROBE CONTROL
SHIFT REG
REMOTE/ LOCAL SELECTOR
LATCH
GATE
5 LINES TO 1-OF-10 DECODER
ANALOG A
ANALOG B
ANALOG C
PUSE WIDTH MOD
DATA VALID
NC
VDD (GND)
VSS
BINARY OUTPUT
D1405-1410 1S1555
R1403 100K
R1404 33K
R1405 100K
C1403 0.47/50V
R1408 270K
R1409 10K
R1410 10K
R1411 10K
R1412 100K
C1405 4.7 50V
C1404 0.022
TP1
TP2
Q1401
Q1401 2SC1815Y 40KHz AMP
D1403, 1404 1S1555
IC1419
IC1431
C1439 47 16V
R1416 150K
R1417 150K
R1418 150K
R1419 150K
R1420 150K
R1421 100K
R1422 100K
R1423 100K
R1424 100K
R1425 100K
R1426 510K
R1427 510K
R1428 510K
R1429 510K
R1430 510K
C1406 0.047
C1407 0.047
C1408 0.047
C1409 0.047
C1410 0.047
IC1414
29V
10V
TO TONE BOARD
V CONT
STANDBY
FL FLUORESCENT DISPLAY TUBE
(AEP, E MODEL)
(UK MODEL)
AM
PM
FILAMENT
(GRID)
8(AEP, E MODEL)
4, 6, 9-16, 17-28, 30, 33
TO POWER BOARD
【TIMER (A) BOARD】
IC951 TMS1943N2L CLOCK
IC951
SHAPING CIRCUIT
÷50 OR ÷60
TIME SECONDS COUNTER
TIME MINUTES COUNTER
TIME HOURS COUNTER
ALARM COMPARATOR
ALARM & SLEEP CIRCUITS
ALARM MINUTES COUNTER
ALARM HOURS COUNTER
SLEEP DOWN COUNTER
TIME
SECONDS
ALARM
SLEEP
CODE CONVERTERS & OUTPUT DRIVERS
BLANKING DETECTOR
SLOW
VDD
FAST
VSS
15.5V
DIMMER
RV951 470K
R964 820
R965 47
R966 150K
C953 4.7 50V
C954 4.7 50V
R959 1K
Q951
D960
Q951 2SC1364 DC AMP
D960 EQA01-06R
D950 1S1555
D950
R953 5.6K
R954 5.6K
R955 100K
R956 100K
R957 5.6K
R960 82K
R962 1.8K
R981 1K
R982 100K
C951 0.022
C952 0.001
Q950
Q950 2SC1364 LED DRIVE
15.2V
【RECEIVER INDICATOR BOARD】
D372 STANDBY
D371 RECEIVE
D372 GL9PR21
D371 GL9NG521
PC951 DIMMER
D956 SLEEP
D955 TIMER
D955, 956 GL-9NG521
【TIMER (B) BOARD】
D951, 953 1S1555
S953
S956
S955
S954
S957
S952
S951
D951
D953
R952 4.7K
R961 1.8K
R968 47K
R951 10K
50Hz 60Hz
CLOCK SET
FAST
SLOW
TIMER/SLEEP SET
SLEEP
ON
TIMER
OFF
TIMER FUNCTION
Q1409 2SC1815Y LED DRIVE
Q1409
R1413 10K
R1414 1.5K
R1415 2K
R4010 100K
IC1415
IC1419
IC1428
IC1418
IC1422
IC1415
IC1429
IC1413
IC1430
IC1428
R1436 470K
R1437 100K
R1438 100K
C1414 0.068
C1415 0.0022
C1416 0.0022
R4017 470
C1440 10 25V
LATCH
DECODER
IC1403
VDD
IC1422
IC1428
IC1413
IC1423
IC1408
IC1415
IC1418
R1441 22K
R1442 470K
C1418 1/50V
R1443 10K
R1444 470K
R1449 100K
R1440 470K
R1439 10K
C1419 0.1
C1417 0.1
C1437 47 16V
R1497 100K
INITIALIZE
TO TAPE CASSETTE SYSTEM CONTROL BOARD

IC1408-1410	MSM4078
IC1411-1413	MSM4023
IC1414, 1415	MSM4081
IC1416-1418	MSM4071
IC1419-1423	MSM4011
IC1424, 1425	MSM4001
IC1426-1429	TC4049
IC1430, 1431	TC4050

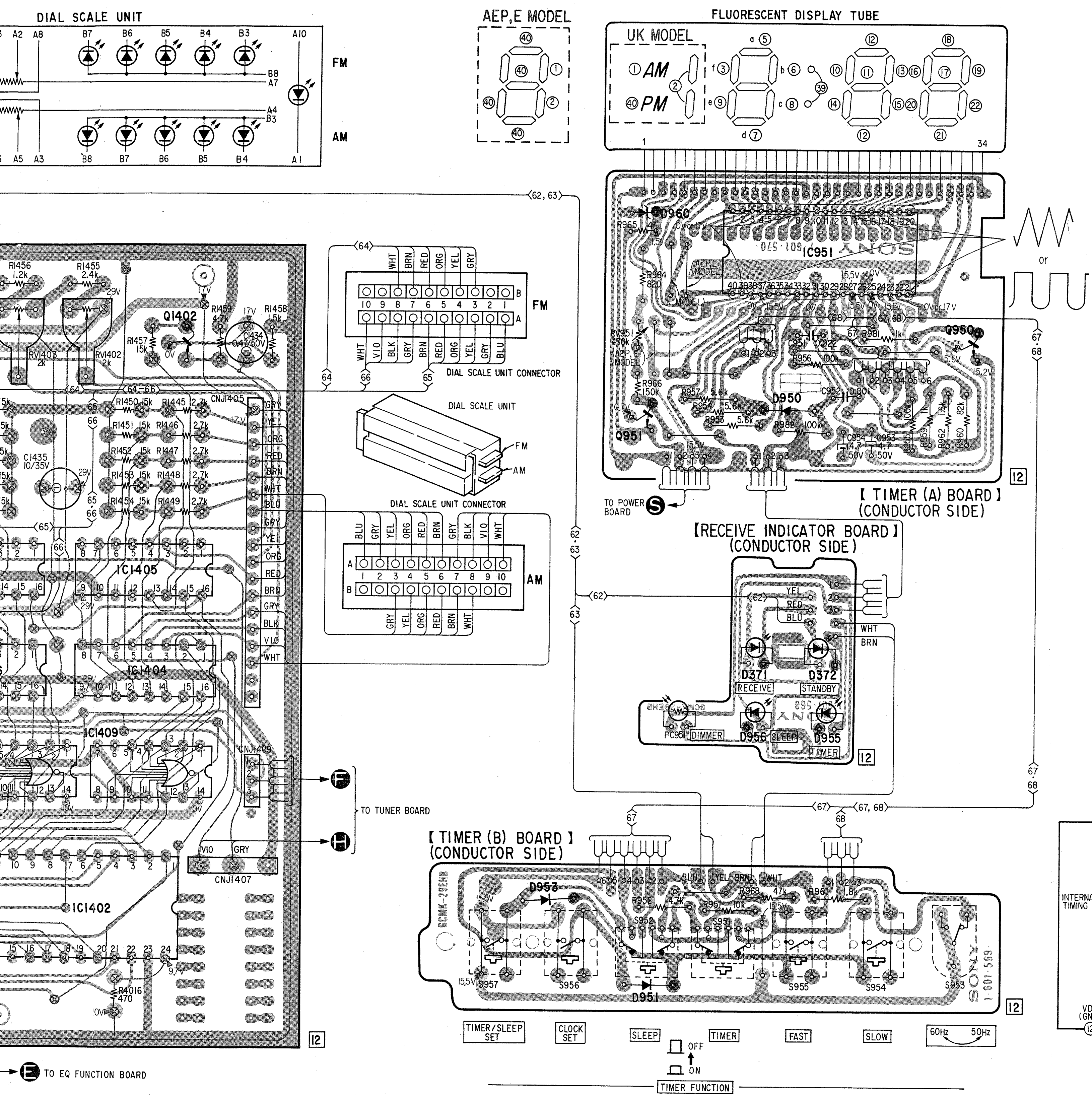

E
F
G
H
I
J
K
L
M
TO TUNER BOARD
TO POWER BOARD
TO TUNER
C BOARD]
IC1401
S2601
DECODER
CONTROL UNIT RECEIVING CLOCK
POR
OSC
INTERNAL TIMING
SIGNAL INPUT
PULSE TRAIN
ON/OFF
BINARY OUTPUT
DATA STROBE CONTROL
SHIFT REG
REMOTE/ LOCAL SELECTOR
LATCH
GATE
5 LINES TO 1-OF-10 DECODER
ANALOG A
ANALOG B
ANALOG C
PULSE WIDTH MOD
DATA VALID
VDD (GND)
VSS
TP1
TP2
D1405-1410
1S1555
IC1402 MSM4514
DECODER
MW1
MW2
MW3
MW4
CASSETTE
MW5
AUX
PHONO
FM1
FM2
FM3
MANUAL
OFF
FM4
FM5
IC1404
IC1405
IC1406
IC1407
SWITCHING
OUTPUT LOAD
DIAL SCALE UNIT
AM
FM
IC1404-1407
SN76043N
ANALOG VOLTAGE SWITCHS
Q1402
2SA1015Y
LED DRIVE
IC1403 MSM4514
DECODER
PHONO STOP
IN
OUT
AMS ▶
AMS ◀
AMS SET
CASSETTE STOP
REW
FF
PAUSE
REC
REC MUTE
FORWORD
STOP
REC MUTE
PAUSE
INITIALIZE
TO TAPE CASSETTE SYSTEM CONTROL BOARD
AMS SET
T.R
REW
FF
OUT
IN
TO TAPE CASSETTE SYSTEM CONTROL BOARD
CT STOP
REC SYNC
TO EQ FUNCTION BOARD
TIMER PLAY
REC
TO TAPE CASSETTE SYSTEM CONTROL BOARD


J
K
L
M
N
O
P
Q
1
2
3
4
5
TO TUNER BOARD
TO POWER BOARD
VA
VF
17V
29V
10V
DIAL SCALE UNIT
AM
FM
A10, B8 (FM)
B3 (AM)
IC1406
IC1407
SWITCHING
OUTPUT LOAD
FM1
FM2
FM3
FM4
FM5
MANUAL
MW1
MW2
MW3
MW4
MW5
IC1404-1407
SN76043N
ANALOG VOLTAGE SWITCHS
Q1402
2SA1015Y
LED DRIVE
【MANUAL SWITCH BOARD】
S361
MANUAL TUNER FUNCTION
FM
LW
MW
S361-1
S361-2
S361-3
S361-4
180K
(AEP,UK MODEL)
130K
(E MODEL)
IC1409
IC1410
IC1411
IC1414
IC1416
IC1417
IC1420
IC1421
IC1423
IC1424
IC1425
IC1426
IC1427
IC1429
IC1430
IC1412
IC1415
TO POWER BOARD
LW
MW
FM
TO TUNER BOARD
【FUNCTION INDICATOR】
BOARD (1/2)
PL354
PL353
PL355
PL356
PL357
PL358
FUNCTION
PHONO
AUX
CASSETTE
Q1403-1408
2SC1815Y
LAMP DRIVE
TUNER
CASSETTE
AUX
PHONO
TO EQ FUNCTION BOARD
MUTE
KEY IN
STOP
START
Q1410
2SC1815Y
INVERTER
FORWORD
STOP
REC MUTE
PAUSE
TIMER PLAY
REC
CT STOP
REC SYNC
TO TAPE CASSETTE SYSTEM CONTROL BOARD
PAUSE
REST
TO TAPE CASSETTE SYSTEM CONTROL BOARD
TO PHONO SYSTEM CONTROL BOARD
TO POWER BOARD

4-21. MOUNTING DIAGRAM

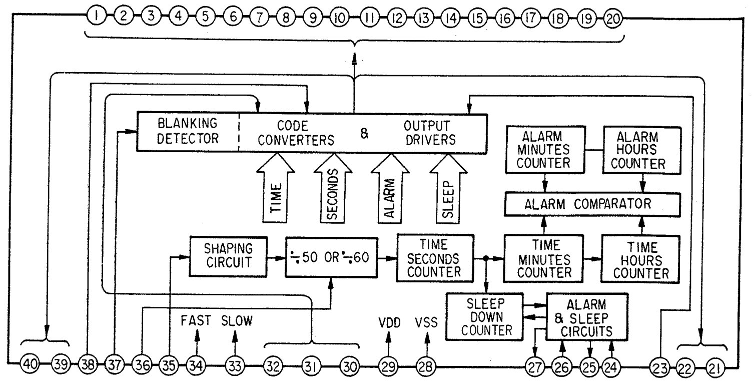

A
B
C
D
E
F
G
H
1
2
3
4
5
【INFRARED RAY RECIVER BOARD】
(CONDUCTOR SIDE)
(REMOTE)
【MANUAL SWITCH BOARD】
(CONDUCTOR SIDE)
(AEP,UK MODEL)
180k (AEP,UK MODEL)
130k (E MODEL)
MANUAL TUNER FUNCTION
MW LW FM
DIAL SCALE UNIT
TO POWER BOARD
TO TUNER BOARD
TO FUNCTION INDICATOR BOARD
TO EQ FUNCTION BOARD
TO TONE BOARD
TO TAPE CASSETTE SYSTEM CONTROL BOARD
TO EQ FUNCTION BOARD
【REMOTE CONTROL LOGIC BOARD】(COMPONENT SIDE)
P
U
Y
L
I
Z
E
IC1401
IC1402
IC1403
IC1404
IC1405
IC1406
IC1407
IC1408
IC1409
IC1410
IC1411
IC1412
IC1413
IC1414
IC1415
IC1416
IC1417
IC1418
IC1419
IC1420
IC1421
IC1422
IC1423
IC1424
IC1425
IC1426
IC1427
IC1428
IC1429
IC1430
IC1431
IC051
Q051
Q1401
Q1403
Q1404
Q1405
Q1406
Q1407
Q1408
Q1409
Q1410
D051
D052
D053
D1401
D1402
D1403
D1404
D1405
D1406
D1407
D1408
D1409
D1410
CNJ1401
CNJ1402
CNJ1403
CNJ1404
CNJ1406
CNJ1408
CNJ1410
CNJ1411
CNJ1412
CNJ1413
CNJ1414
CNJ1416
RV1401 50k
RV1402 2k
RV1403 2k
RV1404 1k
RV1405 2k
RV1406 1k
RV1407 1k

Q·IC		051 IC1418 IC1422 1409	IC051 IC1419 IC1401		IC1412 IC1423 IC1413 IC1428 IC1431	IC1427 IC1415 IC1429 IC1425 IC1403	1410	IC1417 IC1416 IC1408	1401	IC1424 IC1414	IC1421 1403 1405 1404 1408 IC1426 IC1420	1407 1406	IC1411 IC1430	IC1407 IC1406	IC1410	IC1402	IC1405 IC1404 IC14
D	051	053 052		1407 1406 1409 1408 1410 1405				1404 1403	1401	1402							

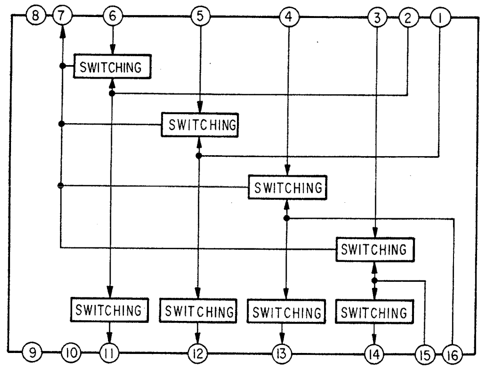

DIAL SCALE UNIT
FM
AM
AEP,E MODEL
FLUORESCENT DISPLAY TUBE
UK MODEL
AM
PM
or
DIAL SCALE UNIT CONNECTOR
DIAL SCALE UNIT
IC1405
IC1404
IC1409
IC1402
CNJ1405
CNJ1409
CNJ1407
Q1402
IC951
D960
Q950
Q951
D950
TO POWER BOARD
S
【TIMER (A) BOARD】
(CONDUCTOR SIDE)
【RECEIVE INDICATOR BOARD】
(CONDUCTOR SIDE)
D371
D372
RECEIVE
STANDBY
PC951
DIMMER
D956
SLEEP
D955
TIMER
TO TUNER BOARD
F
H
【TIMER (B) BOARD】
(CONDUCTOR SIDE)
D953
D951
S957
S956
S955
S954
S953
TIMER/SLEEP SET
CLOCK SET
SLEEP
TIMER
FAST
SLOW
60Hz 50Hz
OFF
ON
TIMER FUNCTION
E
TO EQ FUNCTION BOARD
12

IC1410 IC1402 IC1405 1402 IC1404 IC1409 951 IC951 950	Q·IC
953 960 951 371 950 956 372 955	D

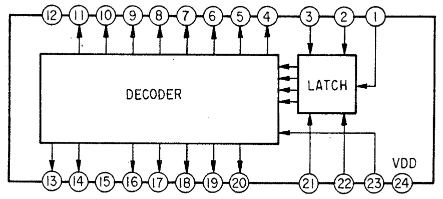
IC951
TMS1943NL2


BLANKING DETECTOR
CODE CONVERTERS & OUTPUT DRIVERS
ALARM MINUTES COUNTER
ALARM HOURS COUNTER
TIME
SECONDS
ALARM
SLEEP
ALARM COMPARATOR
SHAPING CIRCUIT
÷50 OR ÷60
TIME SECONDS COUNTER
TIME MINUTES COUNTER
TIME HOURS COUNTER
SLEEP DOWN COUNTER
ALARM & SLEEP CIRCUITS
FAST
SLOW
VDD
VSS

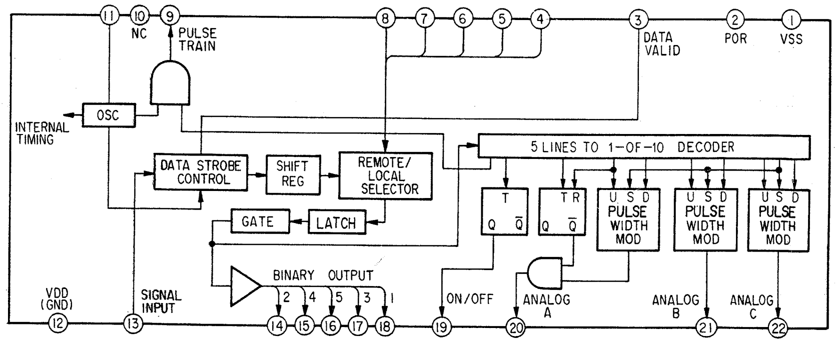
IC1404–1407
SN76043N



IC1402,1403
MSM4514


DECODER
LATCH
VDD

IC1401
S2601

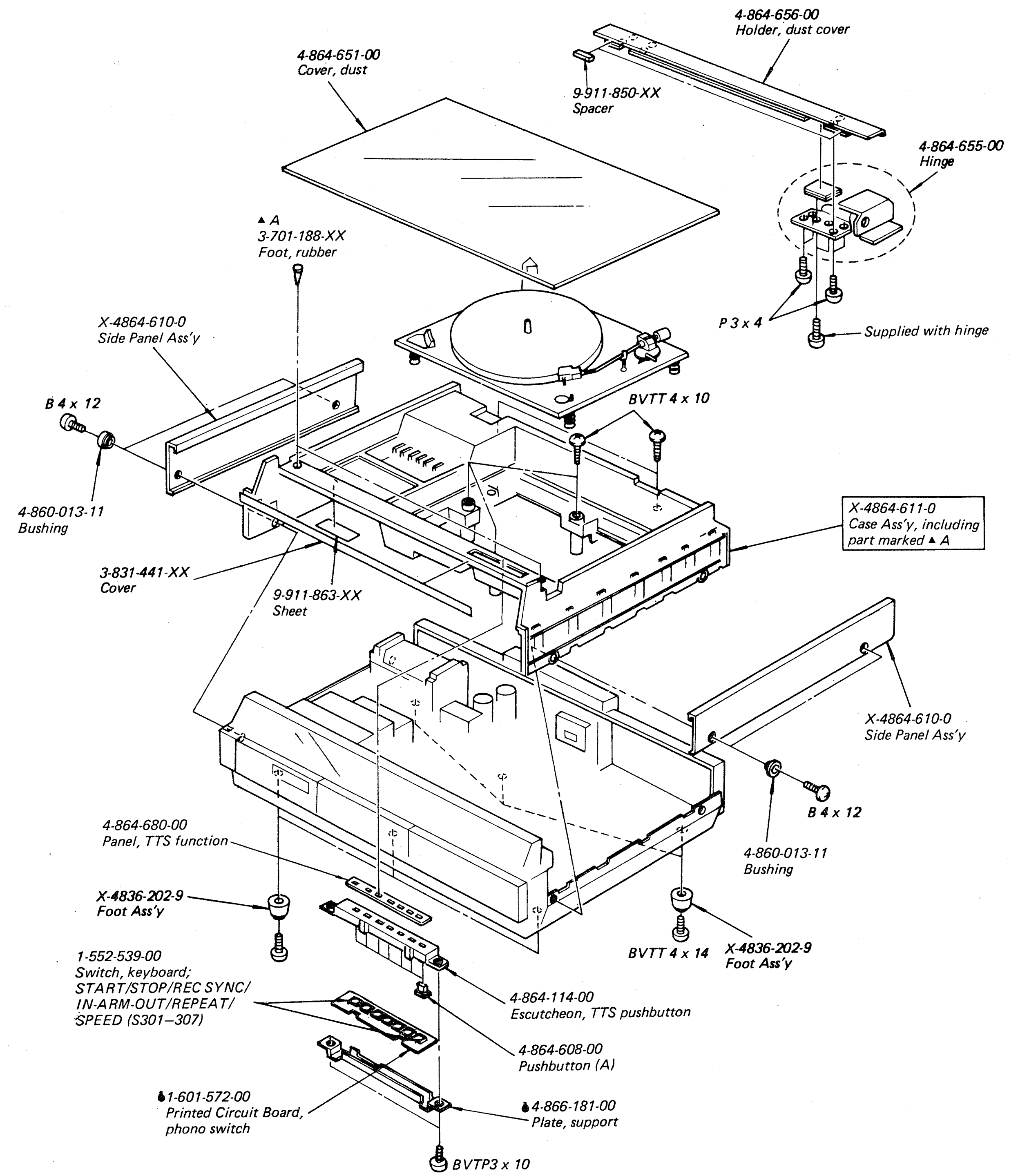

NC
PULSE TRAIN
DATA VALID
POR
VSS
INTERNAL TIMING
OSC
5 LINES TO 1-OF-10 DECODER
DATA STROBE CONTROL
SHIFT REG
REMOTE/LOCAL SELECTOR
GATE
LATCH
PULSE WIDTH MOD
BINARY OUTPUT
VDD (GND)
SIGNAL INPUT
ON/OFF
ANALOG A
ANALOG B
ANALOG C

SECTION 5
EXPLODED VIEWS

(1)

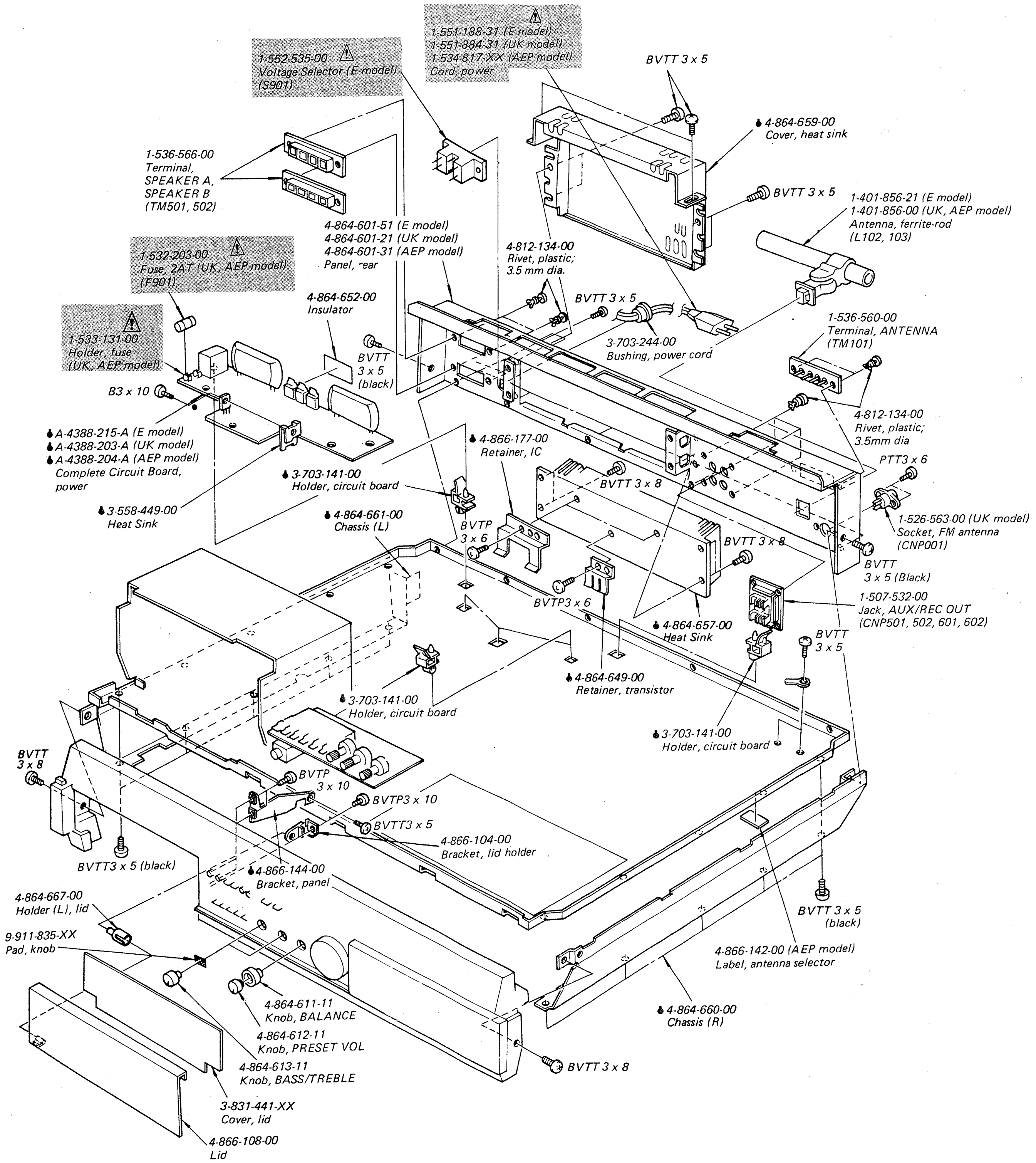
Note:

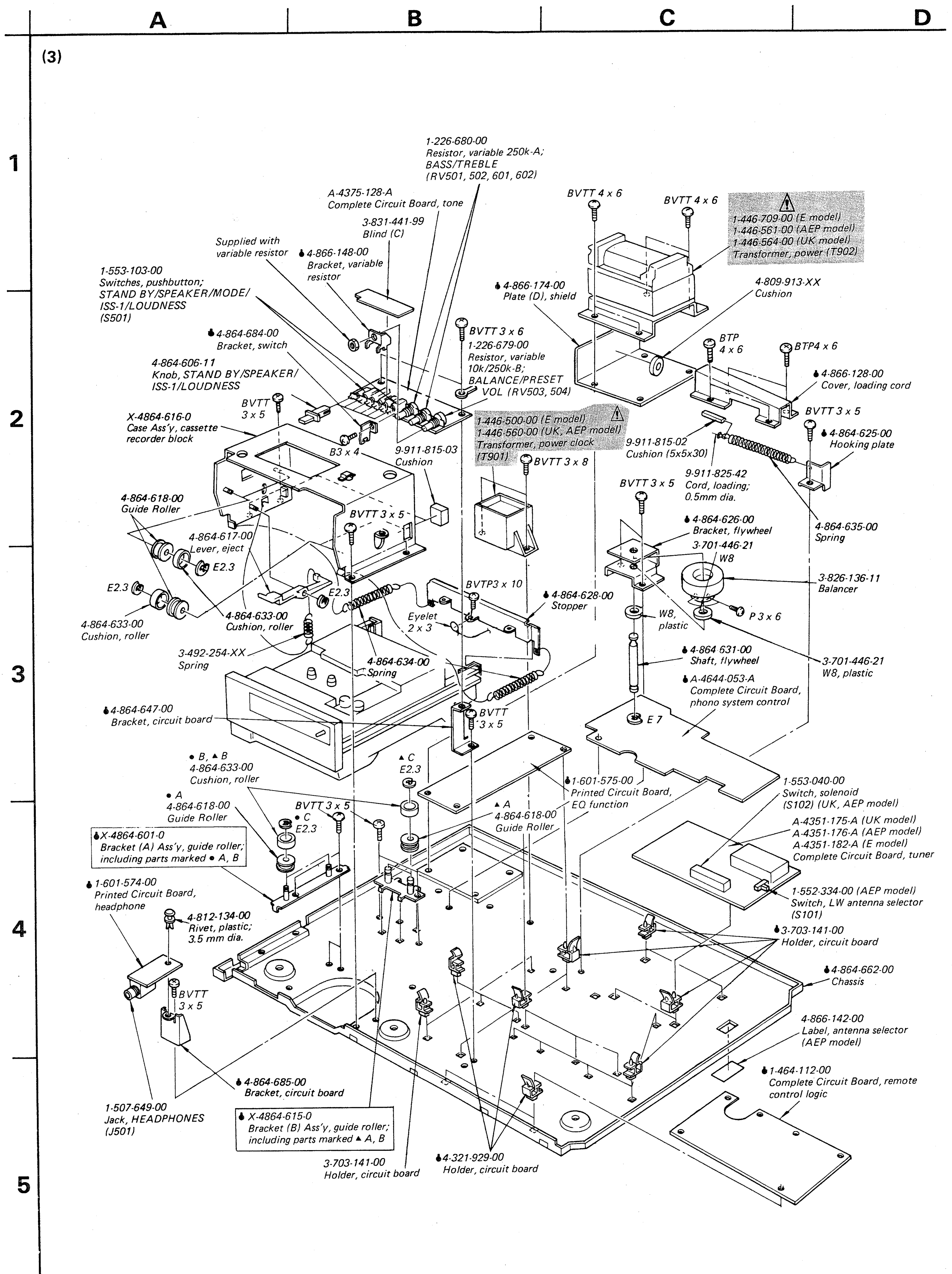
- Items marked "♠" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- All screws are Phillips (cross recess) type unless otherwise noted. (-) = slotted head


4-864-656-00
Holder, dust cover
4-864-651-00
Cover, dust
9-911-850-XX
Spacer
4-864-655-00
Hinge
▲A
3-701-188-XX
Foot, rubber
P 3 x 4
Supplied with hinge
X-4864-610-0
Side Panel Ass'y
B 4 x 12
BVTT 4 x 10
4-860-013-11
Bushing
X-4864-611-0
Case Ass'y, including part marked ▲ A
3-831-441-XX
Cover
9-911-863-XX
Sheet
X-4864-610-0
Side Panel Ass'y
B 4 x 12
4-864-680-00
Panel, TTS function
4-860-013-11
Bushing
X-4836-202-9
Foot Ass'y
BVTT 4 x 14
X-4836-202-9
Foot Ass'y
1-552-539-00
Switch, keyboard;
START/STOP/REC SYNC/
IN-ARM-OUT/REPEAT/
SPEED (S301–307)
4-864-114-00
Escutcheon, TTS pushbutton
4-864-608-00
Pushbutton (A)
♠1-601-572-00
Printed Circuit Board,
phono switch
♠4-866-181-00
Plate, support
BVTP3 x 10

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

(2)


1-552-535-00 ⚠
Voltage Selector (E model)
(S901)
⚠
1-551-188-31 (E model)
1-551-884-31 (UK model)
1-534-817-XX (AEP model)
Cord, power
BVTT 3 x 5
♠4-864-659-00
Cover, heat sink
1-536-566-00
Terminal,
SPEAKER A,
SPEAKER B
(TM501, 502)
BVTT 3 x 5
1-401-856-21 (E model)
1-401-856-00 (UK, AEP model)
Antenna, ferrite-rod
(L102, 103)
4-864-601-51 (E model)
4-864-601-21 (UK model)
4-864-601-31 (AEP model)
Panel, rear
4-812-134-00
Rivet, plastic;
3.5 mm dia.
1-532-203-00 ⚠
Fuse, 2AT (UK, AEP model)
(F901)
4-864-652-00
Insulator
BVTT 3 x 5
3-703-244-00
Bushing, power cord
1-536-560-00
Terminal, ANTENNA
(TM101)
⚠
1-533-131-00
Holder, fuse
(UK, AEP model)
BVTT
3 x 5
(black)
B3 x 10
4-812-134-00
Rivet, plastic;
3.5mm dia
♠A-4388-215-A (E model)
♠A-4388-203-A (UK model)
♠A-4388-204-A (AEP model)
Complete Circuit Board,
power
♠4-866-177-00
Retainer, IC
PTT3 x 6
BVTT 3 x 8
♠3-703-141-00
Holder, circuit board
1-526-563-00 (UK model)
Socket, FM antenna
(CNP001)
♠3-558-449-00
Heat Sink
♠4-864-661-00
Chassis (L)
BVTP
3 x 6
BVTT 3 x 8
BVTT
3 x 5 (Black)
BVTP3 x 6
1-507-532-00
Jack, AUX/REC OUT
(CNP501, 502, 601, 602)
♠4-864-657-00
Heat Sink
BVTT
3 x 5
♠4-864-649-00
Retainer, transistor
♠3-703-141-00
Holder, circuit board
♠3-703-141-00
Holder, circuit board
BVTT
3 x 8
BVTP
3 x 10
BVTP3 x 10
BVTT3 x 5
4-866-104-00
Bracket, lid holder
BVTT3 x 5 (black)
♠4-866-144-00
Bracket, panel
4-864-667-00
Holder (L), lid
BVTT 3 x 5
(black)
9-911-835-XX
Pad, knob
4-866-142-00 (AEP model)
Label, antenna selector
4-864-611-11
Knob, BALANCE
♠4-864-660-00
Chassis (R)
4-864-612-11
Knob, PRESET VOL
BVTT 3 x 8
4-864-613-11
Knob, BASS/TREBLE
3-831-441-XX
Cover, lid
4-866-108-00
Lid


A
B
C
D
1
2
3
4
5
(3)
1-226-680-00
Resistor, variable 250k-A;
BASS/TREBLE
(RV501, 502, 601, 602)
A-4375-128-A
Complete Circuit Board, tone
3-831-441-99
Blind (C)
Supplied with
variable resistor
♠ 4-866-148-00
Bracket, variable
resistor
1-553-103-00
Switches, pushbutton;
STAND BY/SPEAKER/MODE/
ISS-1/LOUDNESS
(S501)
♠ 4-864-684-00
Bracket, switch
4-864-606-11
Knob, STAND BY/SPEAKER/
ISS-1/LOUDNESS
BVTT
3 x 5
X-4864-616-0
Case Ass'y, cassette
recorder block
B3 x 4
9-911-815-03
Cushion
BVTT 3 x 6
1-226-679-00
Resistor, variable
10k/250k-B;
BALANCE/PRESET
VOL (RV503, 504)
BVTT 4 x 6
BVTT 4 x 6
⚠
1-446-709-00 (E model)
1-446-561-00 (AEP model)
1-446-564-00 (UK model)
Transformer, power (T902)
♠ 4-866-174-00
Plate (D), shield
4-809-913-XX
Cushion
BTP
4 x 6
BTP4 x 6
♠ 4-866-128-00
Cover, loading cord
BVTT 3 x 5
♠ 4-864-625-00
Hooking plate
1-446-500-00 (E model)
1-446-560-00 (UK, AEP model)
Transformer, power clock
(T901)
⚠
BVTT 3 x 8
9-911-815-02
Cushion (5x5x30)
9-911-825-42
Cord, loading;
0.5mm dia.
BVTT 3 x 5
4-864-635-00
Spring
4-864-618-00
Guide Roller
BVTT 3 x 5
4-864-617-00
Lever, eject
E2.3
E2.3
E2.3
4-864-633-00
Cushion, roller
4-864-633-00
Cushion, roller
3-492-254-XX
Spring
4-864-634-00
Spring
BVTP3 x 10
Eyelet
2 x 3
♠ 4-864-628-00
Stopper
♠ 4-864-626-00
Bracket, flywheel
3-701-446-21
W8
3-826-136-11
Balancer
W8,
plastic
P 3 x 6
♠ 4-864-631-00
Shaft, flywheel
3-701-446-21
W8, plastic
♠ A-4644-053-A
Complete Circuit Board,
phono system control
E 7
♠ 4-864-647-00
Bracket, circuit board
BVTT
3 x 5
● B, ▲ B
4-864-633-00
Cushion, roller
▲ C
E2.3
● A
4-864-618-00
Guide Roller
BVTT 3 x 5
● C
E2.3
♠ 1-601-575-00
Printed Circuit Board,
EQ function
▲ A
4-864-618-00
Guide Roller
♠ X-4864-601-0
Bracket (A) Ass'y, guide roller;
including parts marked ● A, B
♠ 1-601-574-00
Printed Circuit Board,
headphone
4-812-134-00
Rivet, plastic;
3.5 mm dia.
BVTT
3 x 5
1-553-040-00
Switch, solenoid
(S102) (UK, AEP model)
A-4351-175-A (UK model)
A-4351-176-A (AEP model)
A-4351-182-A (E model)
Complete Circuit Board, tuner
1-552-334-00 (AEP model)
Switch, LW antenna selector
(S101)
♠ 3-703-141-00
Holder, circuit board
♠ 4-864-662-00
Chassis
4-866-142-00
Label, antenna selector
(AEP model)
♠ 1-464-112-00
Complete Circuit Board, remote
control logic
♠ 4-864-685-00
Bracket, circuit board
1-507-649-00
Jack, HEADPHONES
(J501)
♠ X-4864-615-0
Bracket (B) Ass'y, guide roller;
including parts marked ▲ A, B
3-703-141-00
Holder, circuit board
♠ 4-321-929-00
Holder, circuit board

BASE POST, CONNECTOR ETC.

Part No.	Description	Fig.
♠ 1-508-704-00	terminal with base 3P	D
♠ 1-535-115-00	terminal with base 2P	D
♠ 1-535-116-00	terminal with base 3P	D
♠ 1-535-117-00	terminal with base 4P	D
♠ 1-535-118-00	terminal with base 5P	D
♠ 1-535-119-00	terminal with base 6P	D
♠ 1-535-120-00	terminal with base 7P	D
♠ 1-535-121-00	terminal with base 8P	D
♠ 1-560-003-00	connector pin 10P	B
♠ 1-561-123-00	connector plug 3P	A
♠ 1-561-124-00	connector plug 4P	A
♠ 1-561-125-00	connector plug 5P	A
♠ 1-561-126-00	connector plug 6P	A
♠ 1-561-128-00	connector plug 8P	A
♠ 1-561-129-00	connector plug 9P	A
♠ 1-561-281-00	connector pin 5P	B
♠ 1-561-282-00	connector pin 7P	B
♠ 1-561-283-00	connector pin 8P	B
♠ 1-561-286-00	connector pin 2P	B
♠ 1-561-289-00	connector plug 18P	A
♠ 1-561-290-00	connector plug 2P	A
♠ 1-561-439-00	connector socket 3P	C
♠ 1-561-440-00	connector socket 4P	C
♠ 1-561-441-00	connector socket 5P	C
♠ 1-561-443-00	connector socket 7P	C
♠ 1-561-444-00	connector socket 8P	C

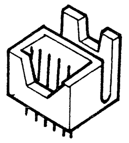


Fig. A

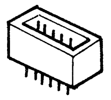


Fig. B

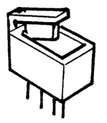


Fig. C

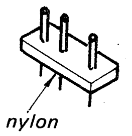
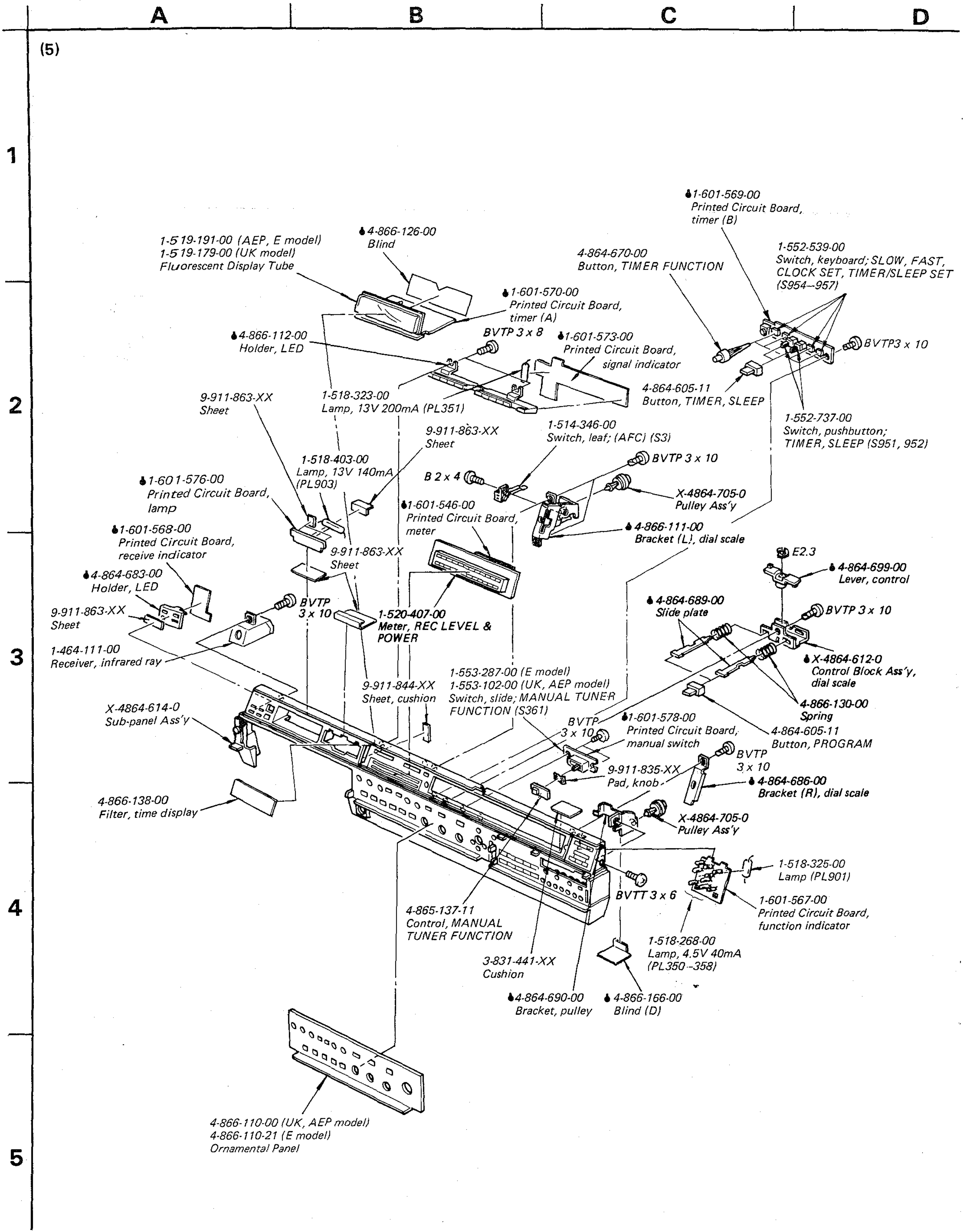
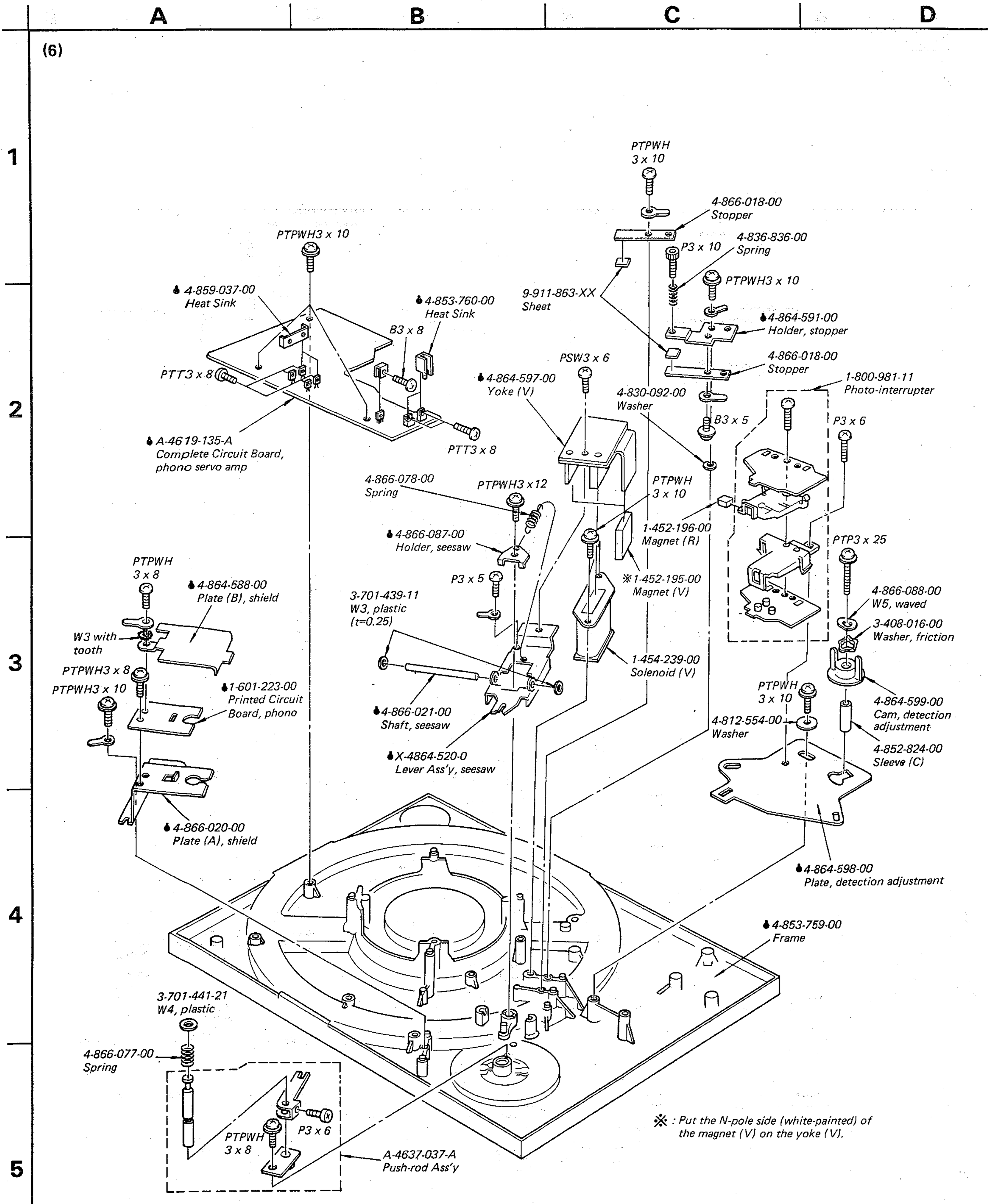


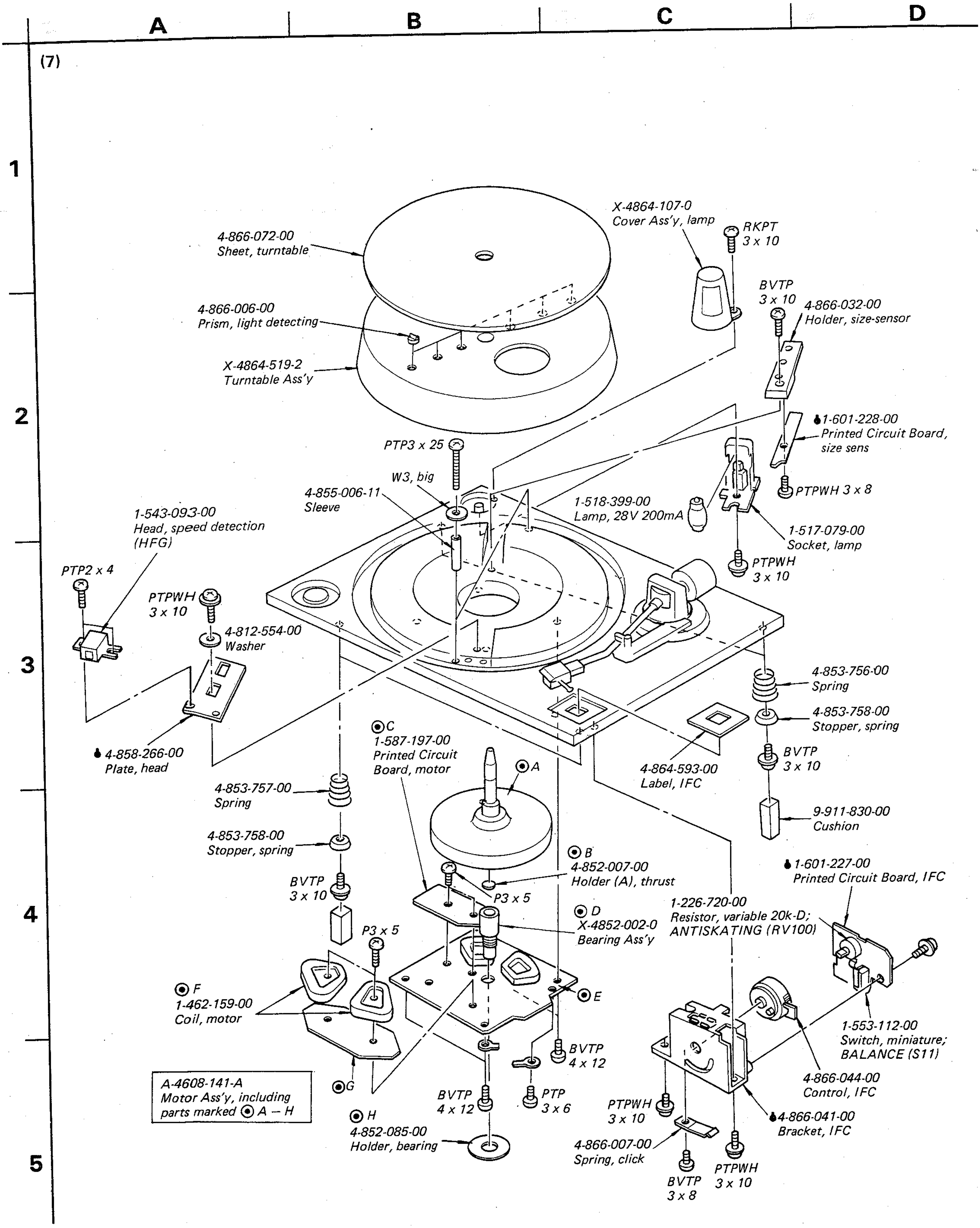
Fig. D

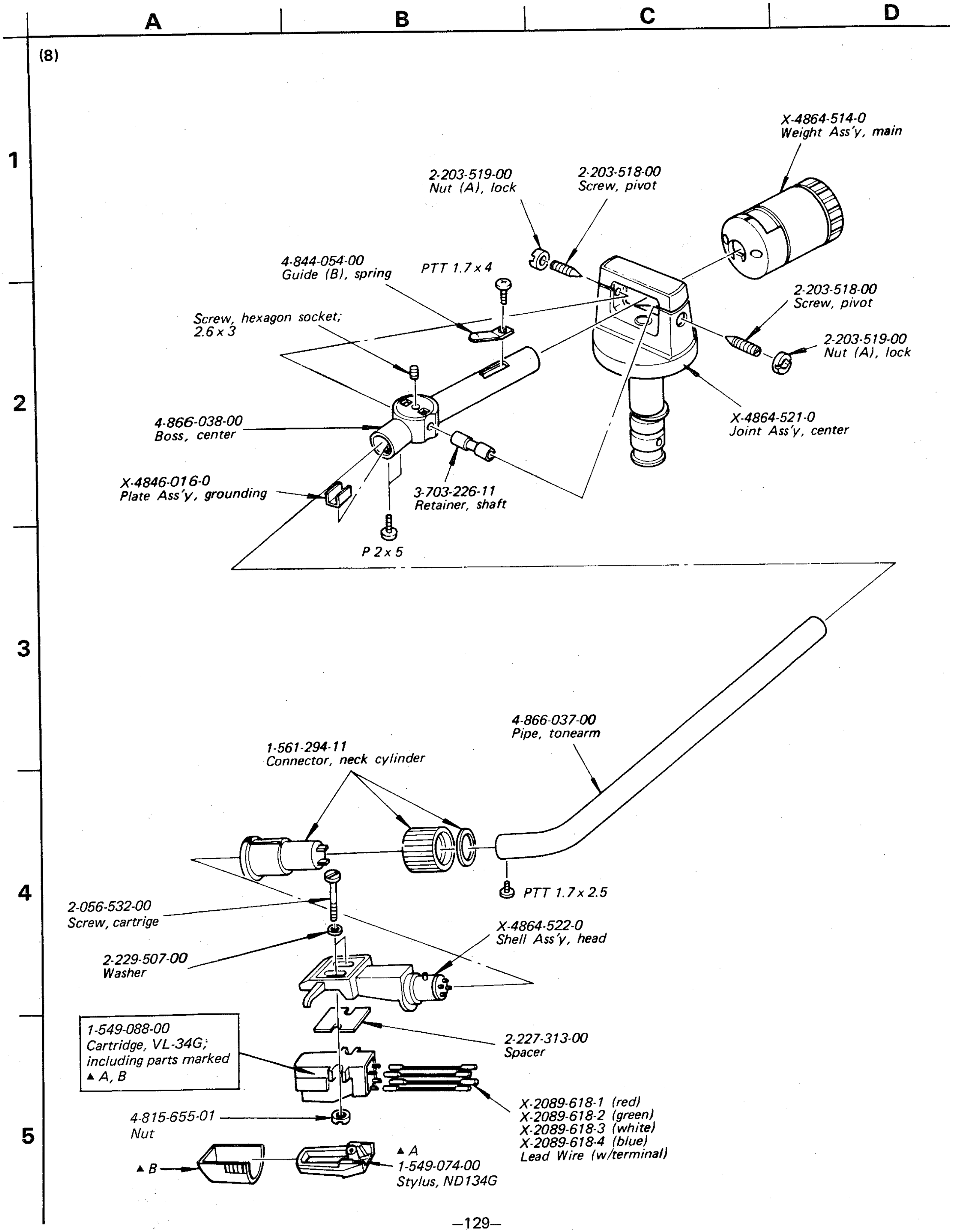
(5)


A
B
C
D
1
2
3
4
5
1-519-191-00 (AEP, E model)
1-519-179-00 (UK model)
Fluorescent Display Tube
♠4-866-126-00
Blind
♠1-601-570-00
Printed Circuit Board, timer (A)
♠4-866-112-00
Holder, LED
BVTP 3 x 8
♠1-601-573-00
Printed Circuit Board, signal indicator
4-864-670-00
Button, TIMER FUNCTION
♠1-601-569-00
Printed Circuit Board, timer (B)
1-552-539-00
Switch, keyboard; SLOW, FAST, CLOCK SET, TIMER/SLEEP SET (S954–957)
BVTP3 x 10
4-864-605-11
Button, TIMER, SLEEP
1-552-737-00
Switch, pushbutton; TIMER, SLEEP (S951, 952)
9-911-863-XX
Sheet
1-518-323-00
Lamp, 13V 200mA (PL351)
9-911-863-XX
Sheet
1-514-346-00
Switch, leaf; (AFC) (S3)
BVTP 3 x 10
1-518-403-00
Lamp, 13V 140mA (PL903)
B 2 x 4
X-4864-705-0
Pulley Ass'y
♠1-601-576-00
Printed Circuit Board, lamp
♠1-601-546-00
Printed Circuit Board, meter
♠4-866-111-00
Bracket (L), dial scale
♠1-601-568-00
Printed Circuit Board, receive indicator
9-911-863-XX
Sheet
E2.3
♠4-864-699-00
Lever, control
♠4-864-683-00
Holder, LED
♠4-864-689-00
Slide plate
9-911-863-XX
Sheet
BVTP 3 x 10
1-520-407-00
Meter, REC LEVEL & POWER
BVTP 3 x 10
1-464-111-00
Receiver, infrared ray
♠X-4864-612-0
Control Block Ass'y, dial scale
1-553-287-00 (E model)
1-553-102-00 (UK, AEP model)
Switch, slide; MANUAL TUNER FUNCTION (S361)
9-911-844-XX
Sheet, cushion
X-4864-614-0
Sub-panel Ass'y
4-866-130-00
Spring
BVTP 3 x 10
♠1-601-578-00
Printed Circuit Board, manual switch
4-864-605-11
Button, PROGRAM
BVTP 3 x 10
9-911-835-XX
Pad, knob
♠4-864-686-00
Bracket (R), dial scale
4-866-138-00
Filter, time display
X-4864-705-0
Pulley Ass'y
1-518-325-00
Lamp (PL901)
BVTT 3 x 6
1-601-567-00
Printed Circuit Board, function indicator
4-865-137-11
Control, MANUAL TUNER FUNCTION
1-518-268-00
Lamp, 4.5V 40mA (PL350–358)
3-831-441-XX
Cushion
♠4-864-690-00
Bracket, pulley
♠4-866-166-00
Blind (D)
4-866-110-00 (UK, AEP model)
4-866-110-21 (E model)
Ornamental Panel

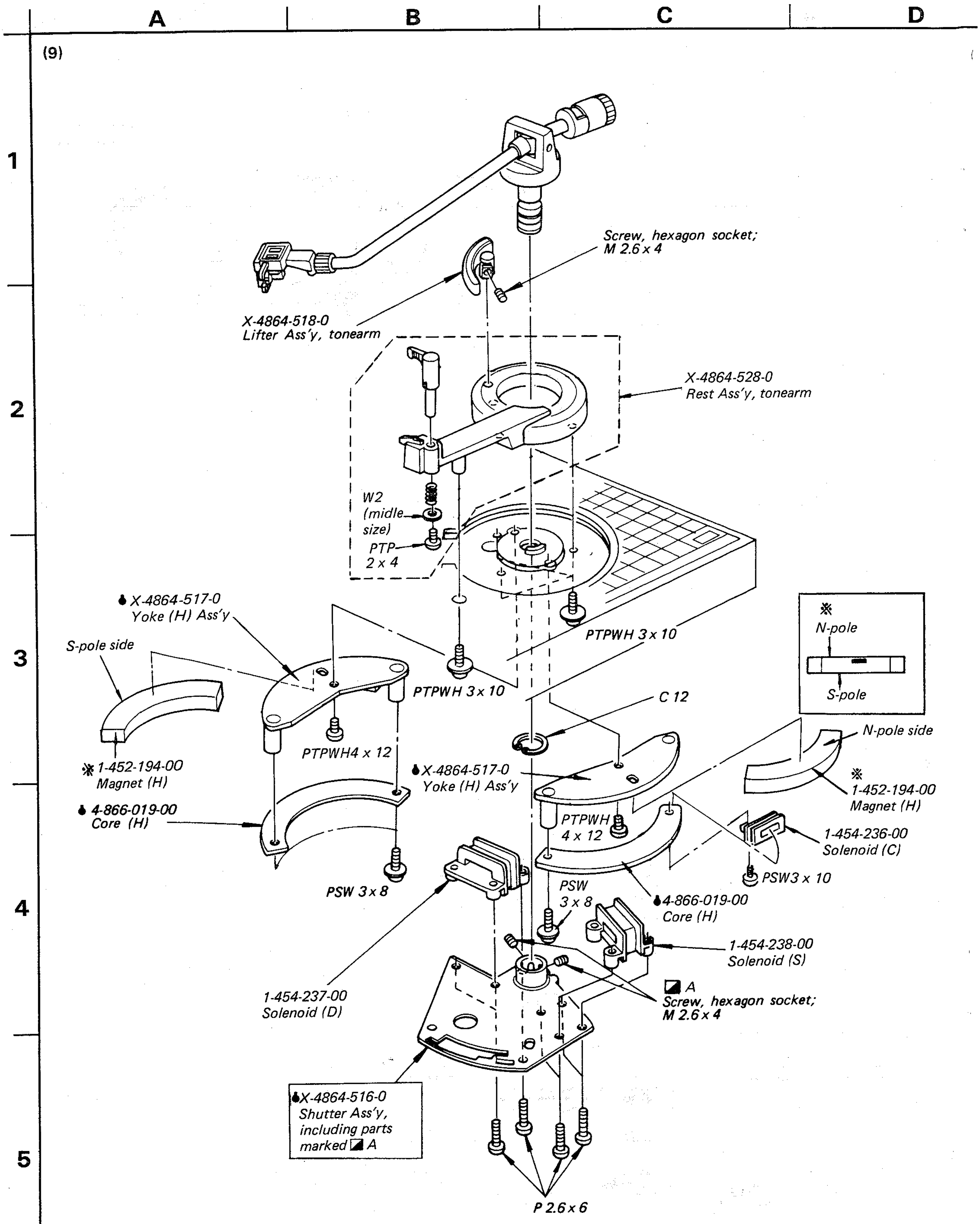

A
B
C
D
1
2
3
4
5
(6)
PTPWH
3 x 10
4-866-018-00
Stopper
4-836-836-00
Spring
P3 x 10
PTPWH3 x 10
PTPWH3 x 10
♦4-864-591-00
Holder, stopper
9-911-863-XX
Sheet
♦4-859-037-00
Heat Sink
♦4-853-760-00
Heat Sink
B3 x 8
4-866-018-00
Stopper
PSW3 x 6
1-800-981-11
Photo-interrupter
PTT3 x 8
♦4-864-597-00
Yoke (V)
4-830-092-00
Washer
B3 x 5
P3 x 6
♦A-4619-135-A
Complete Circuit Board,
phono servo amp
PTT3 x 8
4-866-078-00
Spring
PTPWH3 x12
PTPWH
3 x 10
1-452-196-00
Magnet (R)
PTP3 x 25
♦4-866-087-00
Holder, seesaw
PTPWH
3 x 8
♦4-864-588-00
Plate (B), shield
P3 x 5
※1-452-195-00
Magnet (V)
4-866-088-00
W5, waved
3-701-439-11
W3, plastic
(t=0.25)
3-408-016-00
Washer, friction
W3 with
tooth
PTPWH3 x 8
1-454-239-00
Solenoid (V)
PTPWH3 x 10
♦1-601-223-00
Printed Circuit
Board, phono
PTPWH
3 x 10
4-864-599-00
Cam, detection
adjustment
♦4-866-021-00
Shaft, seesaw
4-812-554-00
Washer
4-852-824-00
Sleeve (C)
♦X-4864-520-0
Lever Ass'y, seesaw
♦4-866-020-00
Plate (A), shield
♦4-864-598-00
Plate, detection adjustment
♦4-853-759-00
Frame
3-701-441-21
W4, plastic
4-866-077-00
Spring
PTPWH
3 x 8
P3 x 6
A-4637-037-A
Push-rod Ass'y

※ : Put the N-pole side (white-painted) of the magnet (V) on the yoke (V).

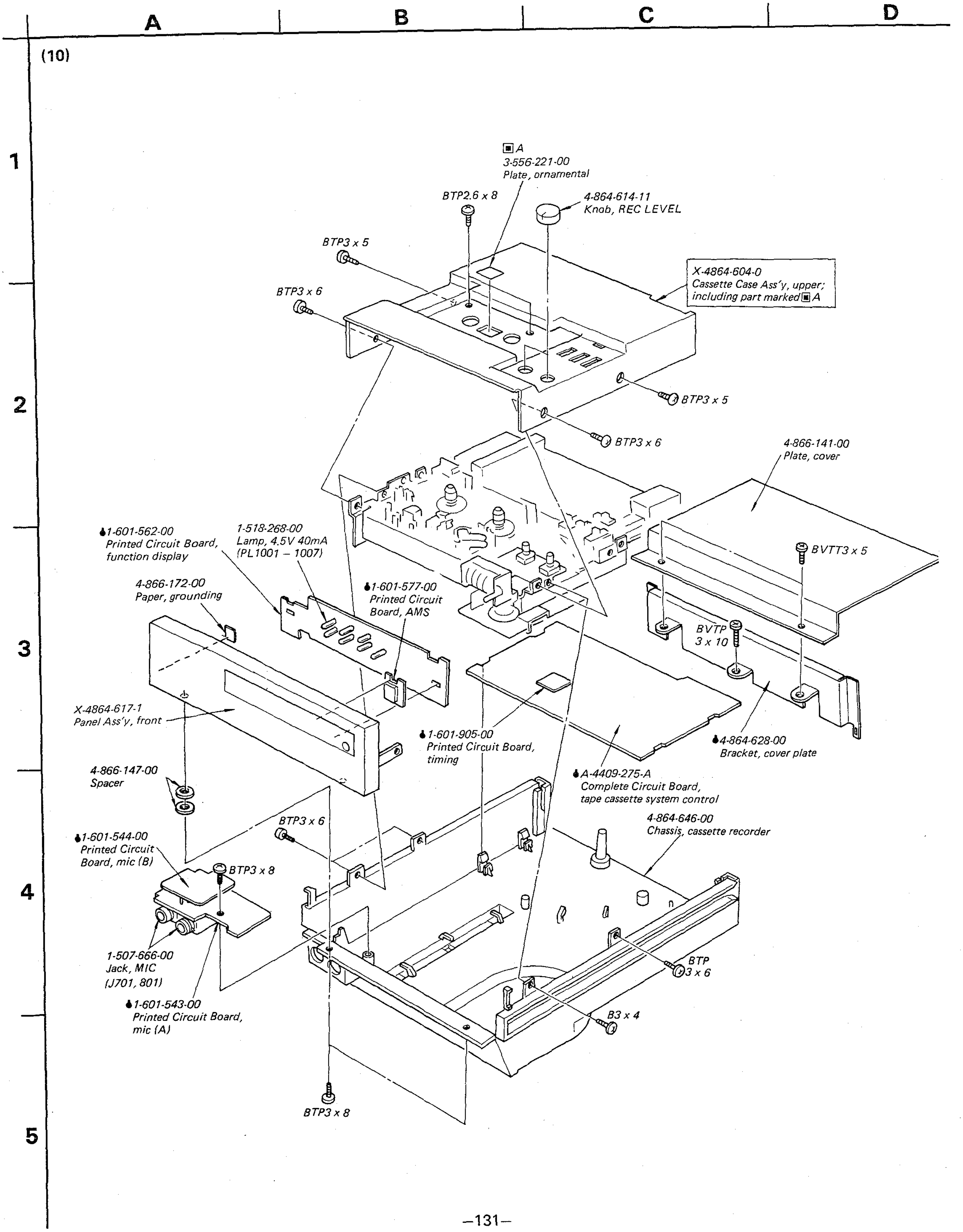

A
B
C
D
1
2
3
4
5
(7)
4-866-072-00
Sheet, turntable
X-4864-107-0
Cover Ass'y, lamp
RKPT
3 x 10
4-866-006-00
Prism, light detecting
BVTP
3 x 10
4-866-032-00
Holder, size-sensor
X-4864-519-2
Turntable Ass'y
1-601-228-00
Printed Circuit Board, size sens
PTP3 x 25
W3, big
4-855-006-11
Sleeve
PTPWH 3 x 8
1-518-399-00
Lamp, 28V 200mA
1-543-093-00
Head, speed detection (HFG)
1-517-079-00
Socket, lamp
PTP2 x 4
PTPWH
3 x 10
PTPWH
3 x 10
4-812-554-00
Washer
4-853-756-00
Spring
4-853-758-00
Stopper, spring
4-858-266-00
Plate, head
◉C
1-587-197-00
Printed Circuit Board, motor
◉A
4-864-593-00
Label, IFC
BVTP
3 x 10
4-853-757-00
Spring
9-911-830-00
Cushion
4-853-758-00
Stopper, spring
◉B
4-852-007-00
Holder (A), thrust
1-601-227-00
Printed Circuit Board, IFC
BVTP
3 x 10
P3 x 5
◉D
X-4852-002-0
Bearing Ass'y
1-226-720-00
Resistor, variable 20k-D;
ANTISKATING (RV100)
P3 x 5
◉F
1-462-159-00
Coil, motor
◉E
1-553-112-00
Switch, miniature;
BALANCE (S11)
BVTP
4 x 12
A-4608-141-A
Motor Ass'y, including parts marked ◉ A – H
◉G
BVTP
4 x 12
PTP
3 x 6
4-866-044-00
Control, IFC
PTPWH
3 x 10
◉H
4-852-085-00
Holder, bearing
4-866-041-00
Bracket, IFC
4-866-007-00
Spring, click
BVTP
3 x 8
PTPWH
3 x 10


A
B
C
D
(8)
1
2
3
4
5
X-4864-514-0
Weight Ass'y, main
2-203-519-00
Nut (A), lock
2-203-518-00
Screw, pivot
4-844-054-00
Guide (B), spring
PTT 1.7 x 4
2-203-518-00
Screw, pivot
Screw, hexagon socket;
2.6 x 3
2-203-519-00
Nut (A), lock
4-866-038-00
Boss, center
X-4864-521-0
Joint Ass'y, center
X-4846-016-0
Plate Ass'y, grounding
3-703-226-11
Retainer, shaft
P 2 x 5
4-866-037-00
Pipe, tonearm
1-561-294-11
Connector, neck cylinder
PTT 1.7 x 2.5
2-056-532-00
Screw, cartrige
X-4864-522-0
Shell Ass'y, head
2-229-507-00
Washer
1-549-088-00
Cartridge, VL-34G;
including parts marked
▲A, B
2-227-313-00
Spacer
X-2089-618-1 (red)
X-2089-618-2 (green)
X-2089-618-3 (white)
X-2089-618-4 (blue)
Lead Wire (w/terminal)
4-815-655-01
Nut
▲A
1-549-074-00
Stylus, ND134G
▲B

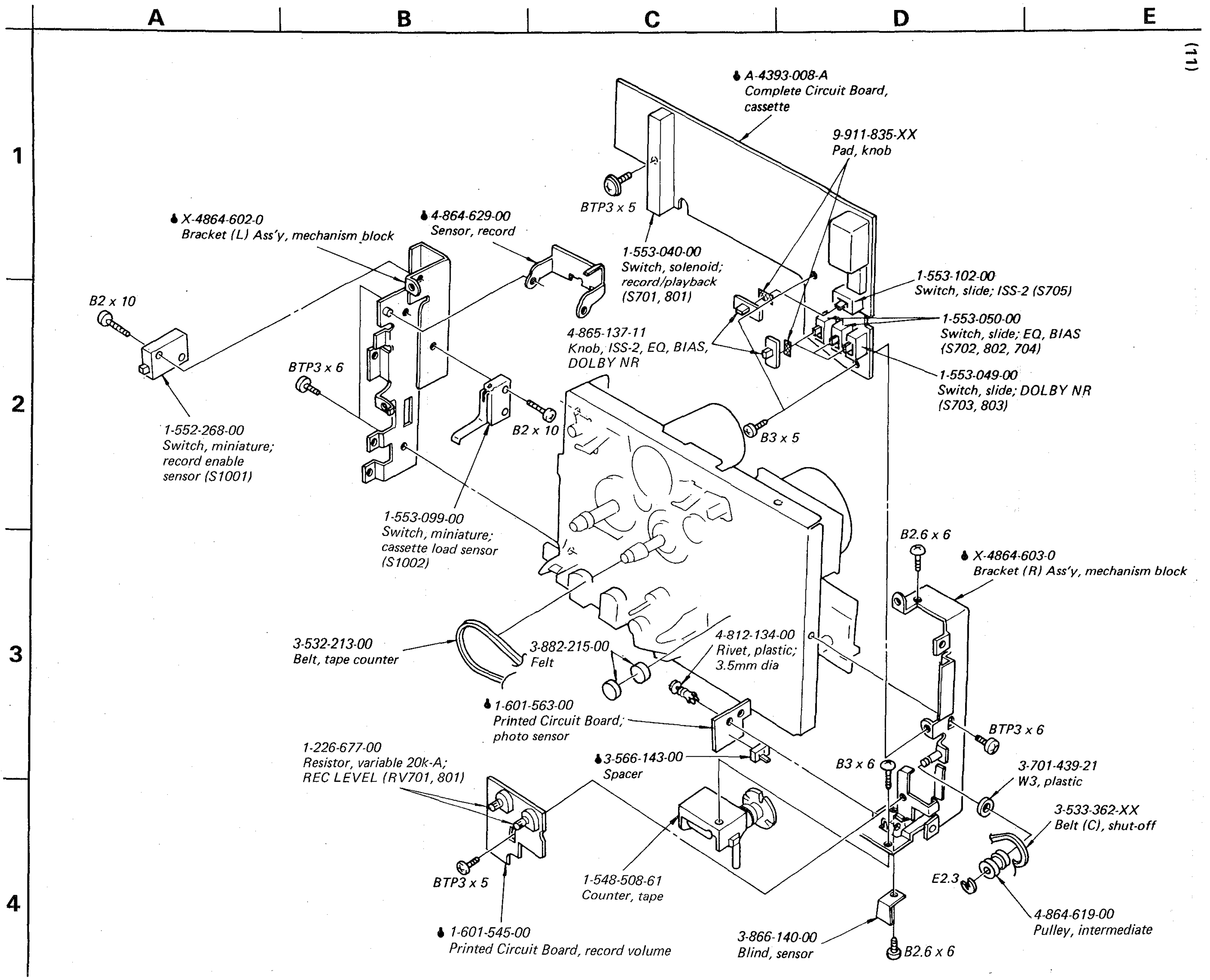
(9)


A
B
C
D
1
2
3
4
5
Screw, hexagon socket; M 2.6 x 4
X-4864-518-0 Lifter Ass'y, tonearm
X-4864-528-0 Rest Ass'y, tonearm
W2 (midle size)
PTP 2 x 4
♦ X-4864-517-0 Yoke (H) Ass'y
S-pole side
PTPWH 3 x 10
PTPWH 3 x 10
※ N-pole
S-pole
C 12
PTPWH4 x 12
N-pole side
※ 1-452-194-00 Magnet (H)
♦ X-4864-517-0 Yoke (H) Ass'y
※ 1-452-194-00 Magnet (H)
♦ 4-866-019-00 Core (H)
PTPWH 4 x 12
1-454-236-00 Solenoid (C)
PSW3 x 10
PSW 3 x 8
PSW 3 x 8
♦ 4-866-019-00 Core (H)
1-454-238-00 Solenoid (S)
1-454-237-00 Solenoid (D)
◪ A Screw, hexagon socket; M 2.6 x 4
♦ X-4864-516-0 Shutter Ass'y, including parts marked ◪ A
P 2.6 x 6

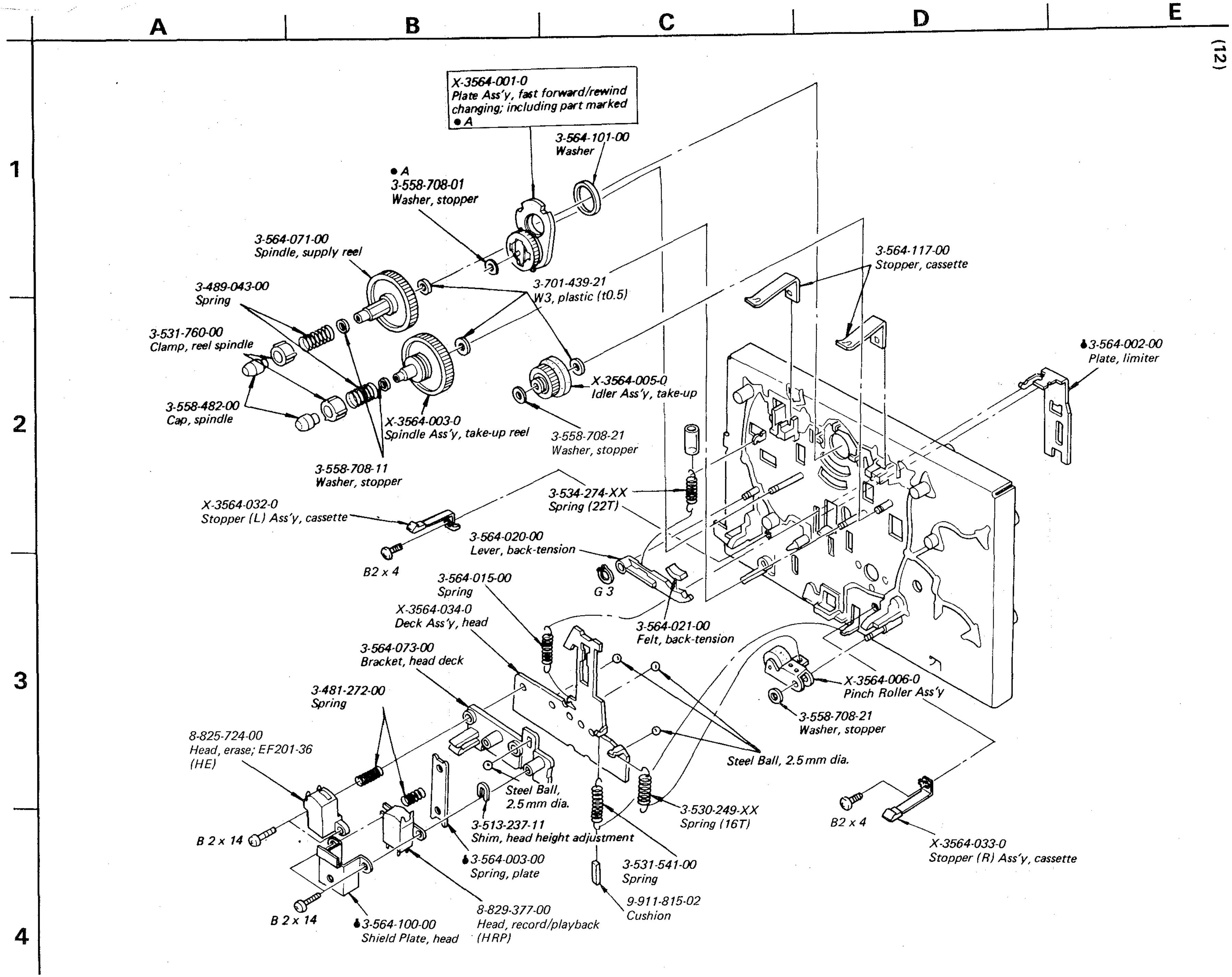
(10)


A
B
C
D
1
2
3
4
5
▣A
3-556-221-00
Plate, ornamental
BTP2.6 x 8
4-864-614-11
Knob, REC LEVEL
BTP3 x 5
X-4864-604-0
Cassette Case Ass'y, upper; including part marked ▣A
BTP3 x 6
BTP3 x 5
BTP3 x 6
4-866-141-00
Plate, cover
♦1-601-562-00
Printed Circuit Board, function display
1-518-268-00
Lamp, 4.5V 40mA
(PL1001 – 1007)
BVTT3 x 5
4-866-172-00
Paper, grounding
♦1-601-577-00
Printed Circuit Board, AMS
BVTP
3 x 10
X-4864-617-1
Panel Ass'y, front
♦1-601-905-00
Printed Circuit Board, timing
♦4-864-628-00
Bracket, cover plate
4-866-147-00
Spacer
♦A-4409-275-A
Complete Circuit Board, tape cassette system control
BTP3 x 6
4-864-646-00
Chassis, cassette recorder
♦1-601-544-00
Printed Circuit Board, mic (B)
BTP3 x 8
1-507-666-00
Jack, MIC
(J701, 801)
BTP
3 x 6
♦1-601-543-00
Printed Circuit Board, mic (A)
B3 x 4
BTP3 x 8

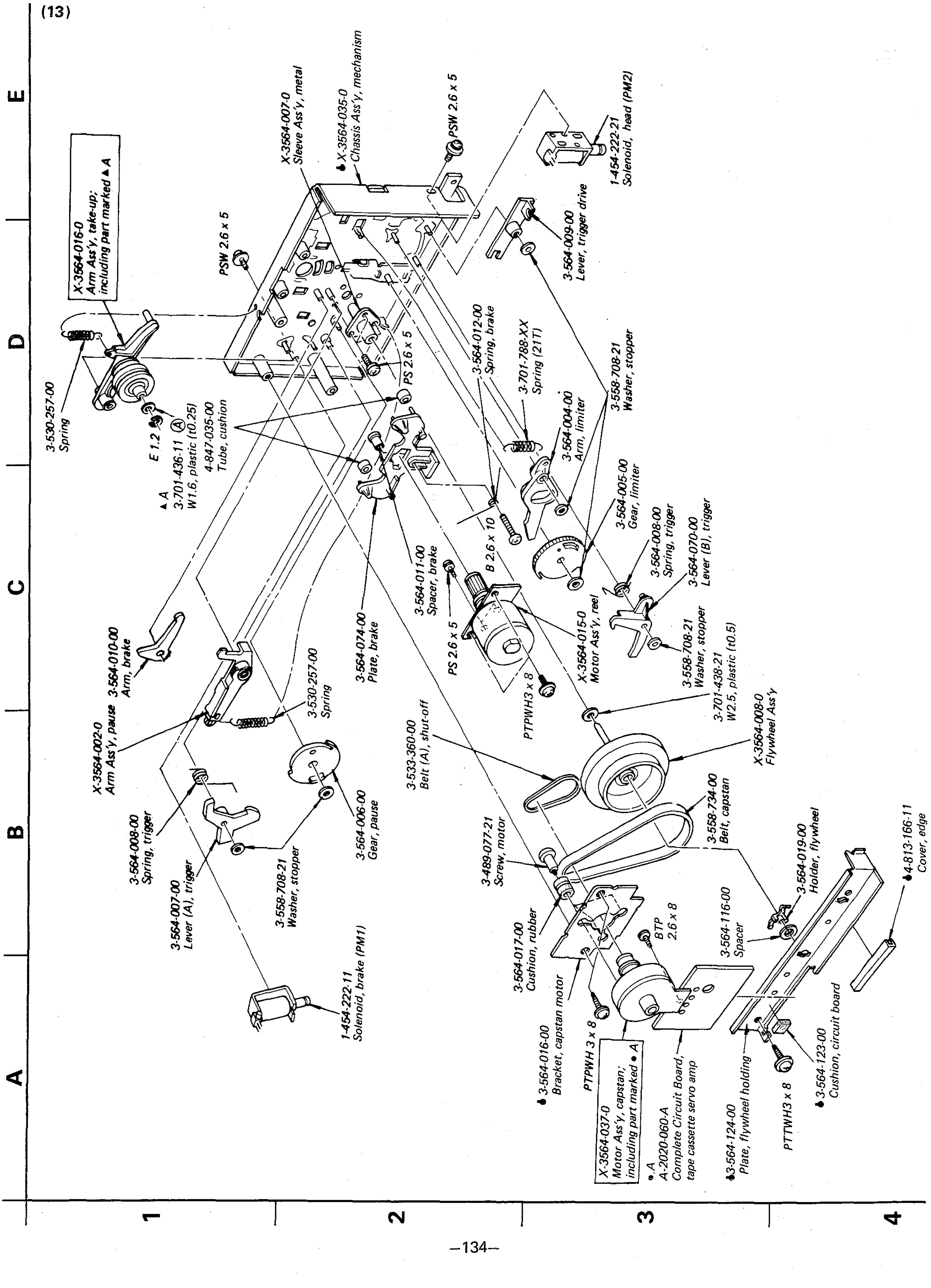
(11)

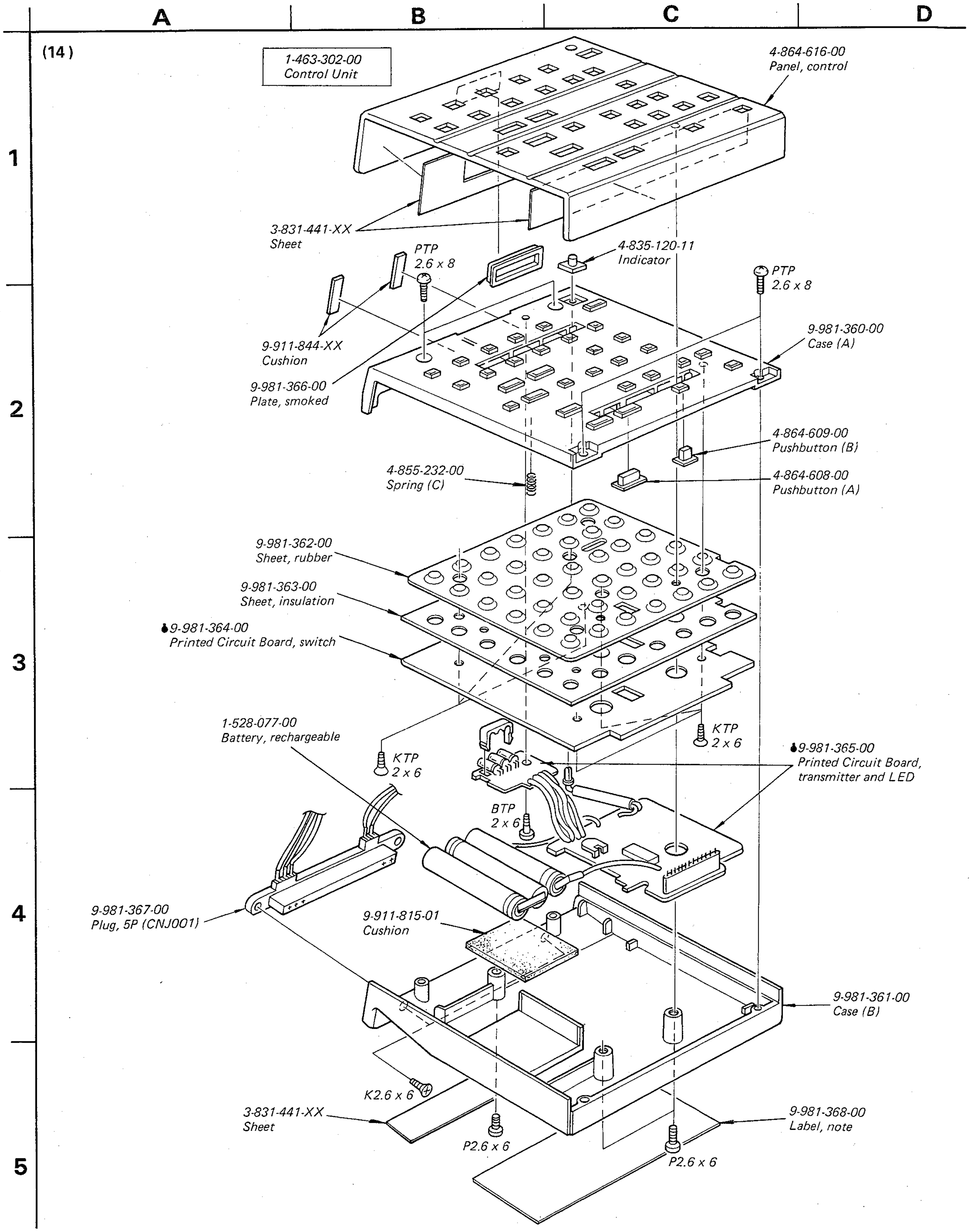

A
B
C
D
E
1
2
3
4
♦ A-4393-008-A
Complete Circuit Board, cassette
9-911-835-XX
Pad, knob
BTP3 x 5
1-553-040-00
Switch, solenoid; record/playback (S701, 801)
♦ X-4864-602-0
Bracket (L) Ass'y, mechanism block
♦ 4-864-629-00
Sensor, record
1-553-102-00
Switch, slide; ISS-2 (S705)
1-553-050-00
Switch, slide; EQ, BIAS (S702, 802, 704)
B2 x 10
4-865-137-11
Knob, ISS-2, EQ, BIAS, DOLBY NR
1-553-049-00
Switch, slide; DOLBY NR (S703, 803)
BTP3 x 6
B2 x 10
B3 x 5
1-552-268-00
Switch, miniature; record enable sensor (S1001)
1-553-099-00
Switch, miniature; cassette load sensor (S1002)
B2.6 x 6
♦ X-4864-603-0
Bracket (R) Ass'y, mechanism block
3-532-213-00
Belt, tape counter
3-882-215-00
Felt
4-812-134-00
Rivet, plastic; 3.5mm dia
♦ 1-601-563-00
Printed Circuit Board; photo sensor
BTP3 x 6
1-226-677-00
Resistor, variable 20k-A; REC LEVEL (RV701, 801)
♦ 3-566-143-00
Spacer
B3 x 6
3-701-439-21
W3, plastic
3-533-362-XX
Belt (C), shut-off
BTP3 x 5
1-548-508-61
Counter, tape
E2.3
4-864-619-00
Pulley, intermediate
♦ 1-601-545-00
Printed Circuit Board, record volume
3-866-140-00
Blind, sensor
B2.6 x 6

(12)


A
B
C
D
E
1
2
3
4
X-3564-001-0
Plate Ass'y, fast forward/rewind changing; including part marked ● A
3-564-101-00
Washer
● A
3-558-708-01
Washer, stopper
3-564-071-00
Spindle, supply reel
3-701-439-21
W3, plastic (t0.5)
3-564-117-00
Stopper, cassette
3-489-043-00
Spring
3-531-760-00
Clamp, reel spindle
3-564-002-00
Plate, limiter
X-3564-005-0
Idler Ass'y, take-up
3-558-482-00
Cap, spindle
X-3564-003-0
Spindle Ass'y, take-up reel
3-558-708-21
Washer, stopper
3-558-708-11
Washer, stopper
3-534-274-XX
Spring (22T)
X-3564-032-0
Stopper (L) Ass'y, cassette
3-564-020-00
Lever, back-tension
B2 x 4
G 3
3-564-015-00
Spring
X-3564-034-0
Deck Ass'y, head
3-564-021-00
Felt, back-tension
3-564-073-00
Bracket, head deck
X-3564-006-0
Pinch Roller Ass'y
3-481-272-00
Spring
3-558-708-21
Washer, stopper
8-825-724-00
Head, erase; EF201-36 (HE)
Steel Ball, 2.5 mm dia.
Steel Ball, 2.5 mm dia.
3-530-249-XX
Spring (16T)
B2 x 4
B 2 x 14
3-513-237-11
Shim, head height adjustment
X-3564-033-0
Stopper (R) Ass'y, cassette
3-564-003-00
Spring, plate
3-531-541-00
Spring
9-911-815-02
Cushion
B 2 x 14
3-564-100-00
Shield Plate, head
8-829-377-00
Head, record/playback (HRP)

(13)


X-3564-016-0
Arm Ass'y, take-up; including part marked ▲ A
3-530-257-00
Spring
E 1.2
3-701-436-11 Ⓐ
W1.6, plastic (t0.25)
4-847-035-00
Tube, cushion
▲ A
PSW 2.6 x 5
X-3564-007-0
Sleeve Ass'y, metal
● X-3564-035-0
Chassis Ass'y, mechanism
PSW 2.6 x 5
1-454-222-21
Solenoid, head (PM2)
3-564-009-00
Lever, trigger drive
PS 2.6 x 5
3-564-012-00
Spring, brake
3-701-788-XX
Spring (21T)
3-564-004-00
Arm, limiter
3-558-708-21
Washer, stopper
3-564-005-00
Gear, limiter
3-564-008-00
Spring, trigger
3-564-070-00
Lever (B), trigger
B 2.6 x 10
3-564-011-00
Spacer, brake
PS 2.6 x 5
3-564-074-00
Plate, brake
X-3564-015-0
Motor Ass'y, reel
3-558-708-21
Washer, stopper
3-701-438-21
W2.5, plastic (t0.5)
PTPWH3 x 8
X-3564-008-0
Flywheel Ass'y
3-564-010-00
Arm, brake
X-3564-002-0
Arm Ass'y, pause
3-530-257-00
Spring
3-533-360-00
Belt (A), shut-off
3-564-008-00
Spring, trigger
3-564-007-00
Lever (A), trigger
3-558-708-21
Washer, stopper
3-564-006-00
Gear, pause
3-489-077-21
Screw, motor
3-558-734-00
Belt, capstan
3-564-019-00
Holder, flywheel
● 4-813-166-11
Cover, edge
1-454-222-11
Solenoid, brake (PM1)
3-564-017-00
Cushion, rubber
BTP 2.6 x 8
3-564-116-00
Spacer
● 3-564-016-00
Bracket, capstan motor
PTPWH 3 x 8
X-3564-037-0
Motor Ass'y, capstan; including part marked ● A
● A
A-2020-060-A
Complete Circuit Board, tape cassette servo amp
● 3-564-124-00
Plate, flywheel holding
PTTWH3 x 8
● 3-564-123-00
Cushion, circuit board
A
B
C
D
E
1
2
3
4


A
B
C
D
1
2
3
4
5
(14)
1-463-302-00
Control Unit
4-864-616-00
Panel, control
3-831-441-XX
Sheet
PTP
2.6 x 8
4-835-120-11
Indicator
PTP
2.6 x 8
9-911-844-XX
Cushion
9-981-360-00
Case (A)
9-981-366-00
Plate, smoked
4-864-609-00
Pushbutton (B)
4-855-232-00
Spring (C)
4-864-608-00
Pushbutton (A)
9-981-362-00
Sheet, rubber
9-981-363-00
Sheet, insulation
9-981-364-00
Printed Circuit Board, switch
1-528-077-00
Battery, rechargeable
KTP
2 x 6
KTP
2 x 6
9-981-365-00
Printed Circuit Board, transmitter and LED
BTP
2 x 6
9-981-367-00
Plug, 5P (CNJ001)
9-911-815-01
Cushion
9-981-361-00
Case (B)
K2.6 x 6
3-831-441-XX
Sheet
9-981-368-00
Label, note
P2.6 x 6
P2.6 x 6

SECTION 6
ELECTRICAL PARTS LIST

SEMICONDUCTORS

Transistors

Ref. No.	*Part No.*	*Description*
Q001	8-729-663-47	2SC1364
Q002–004	8-729-818-70	2SD187
Q051	8-729-203-04	2SK30A
Q101–103	8-729-665-47	2SC1362
Q104–107	8-729-663-47	2SC1364
Q108	8-729-663-47	2SC1364 (AEP, UK model)
Q109	8-760-413-10	2SC1475 (AEP, UK model)
Q110	8-729-663-47	2SC1364 (AEP, UK model)
Q111	8-760-413-10	2SC1475 (AEP, UK model)
Q112, 113	8-729-663-47	2SC1364
Q114	8-729-663-47	2SC1364
Q301–304	8-729-663-47	2SC1364
Q406–408	8-729-978-62	2SA786
Q409–411	8-729-902-11	2SC2021
Q412	8-729-497-32	2SD973
Q413	8-729-479-32	2SB793
Q414, 415	8-729-978-62	2SA786
Q416	8-729-203-04	2SK30A
Q417	8-729-978-62	2SA786
Q418	8-729-902-11	2SC2021
Q419	8-729-479-32	2SB793
Q420	8-729-978-62	2SA786
Q421	8-729-497-32	2SD973
Q422	8-729-902-11	2SC2021
Q501, 601	8-729-663-47	2SC1364
Q502, 602	8-729-665-47	2SC1362
Q503, 603	8-729-612-77	2SA1027R
Q505, 605	8-729-663-47	2SC1364
Q506	8-729-612-77	2SA1027R
Q507	8-729-663-47	2SC1364
Q604, 606	8-729-612-77	2SA1027R
Q701, 801 Q702, 802	8-729-665-47	2SC1362
Q703–706 Q803–806	8-729-663-47	2SC1364
Q901, 902	8-729-316-12	2SC1061
Q903	8-729-317-12	2SA671
Q904	8-760-413-10	2SC1475
Q905	8-729-141-43	2SD414
Q906	8-760-413-10	2SC1475
Q907	8-729-141-43	2SD414
Q908	8-729-663-47	2SC1364
Q909	8-729-154-83	2SB548
Q950, 951	8-729-663-47	2SC1364
Q1002,1003	8-729-663-47	2SC1364
Q1004	8-729-195-23	2SA952
Q1005	8-729-141-43	2SD414
Q1006	8-729-154-83	2SB548
Q1007	8-729-663-47	2SC1364
Q1008	8-729-154-83	2SB548
Q1009,1010	8-760-413-10	2SC1475
Q1011,1012	8-729-663-47	2SC1364
Q1013,1014	8-760-413-10	2SC1475
Q1015–Q1022	8-729-663-47	2SC1364
Q1023	8-729-612-77	2SA1027R
Q1024	8-729-101-13	PH103
Q1025–Q1027	8-729-663-47	2SC1364
Q1030,1031	8-729-663-47	2SC1364
Q1401	8-729-663-47	2SC1364
Q1402	8-729-612-77	2SA1027R
Q1403–Q1408	8-729-663-47	2SC1364
Q1409,1410	8-729-663-47	2SC1364
Q2101	8-729-978-62	2SA786
Q2102,2103	8-729-902-11	2SC2021
Q2104	8-729-902-11	2SC2021
Q2105	8-729-978-62	2SA786
Q2106	8-729-902-11	2SC2021
Q2107	8-729-902-11	2SC2021
Q2108	8-729-978-62	2SA786
Q2109	8-729-141-43	2SD414
Q2110	8-729-154-83	2SB548

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

- Items marked "♠" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

Ref. No.	*Part No.*	*Description*
Q2111	8-729-141-43	2SD414
Q2112	8-729-154-83	2SB548
Q2113	8-729-978-62	2SA786
Q2114	8-729-902-11	2SC2021
Q2115	8-729-978-62	2SA786
Q2116	8-729-902-11	2SC2021
Q2117	8-729-316-12	2SC1061
Q2118	8-729-317-12	2SA671
Q2119	8-729-199-80	2SD998
Q2201–Q2203	8-729-101-01	PH101
Q3001,3002	8-729-663-47	2SC1364
Q3003	8-729-180-93	2SD809
Q3004	8-729-173-13	2SB731
Q3005	8-729-180-93	2SD809
Q3006	8-729-173-13	2SB731

ICs

Ref. No.	*Part No.*	*Description*
IC001	8-759-926-00	S2600
IC051	8-759-145-58	µPC4558C
IC101	8-751-680-01	CX168
IC102	8-759-904-89	TL489CP
IC201	8-759-111-61	µPC1161C
IC301	8-759-140-13	µPD4013C
IC302	8-759-140-01	µPD4001C
IC303	8-759-140-11	µPD4011C
IC304	8-759-140-81	µPD4081C
IC305	8-759-140-49	µPD4049C
IC351	8-759-904-89	TL489CP
IC401	8-759-241-75	TC40175BP
IC402	8-759-140-01	µPD4001C
IC403	8-759-140-11	µPD4011C
IC404	8-759-140-13	µPD4013C
IC405	8-759-140-69	µPD4069C
IC406	8-759-140-01	µPD4001C
IC407	8-759-140-25	µPD4025C
IC408	8-759-140-69	µPD4069C
IC409	8-759-240-93	TC4093BP

Ref. No.	*Part No.*	*Description*
IC410	8-759-140-11	µPD4011C
IC411	8-759-140-23	µPD4023C
IC412	8-759-140-11	µPD4011C
IC413	8-759-140-23	µPD4023C
IC414, 415	8-759-140-11	µPD4011C
IC416	8-759-140-23	µPD4023C
IC417	8-759-140-11	µPD4011C
IC418, 419	8-759-140-01	µPD4001C
IC420, 421	8-759-140-69	µPD4069C
IC422, 423	8-759-145-58	µPC4558C
IC501	8-759-831-22	LA3122
IC502, 602	8-759-960-43	SN76043N
IC503, 603	8-759-313-40	SI1340H
IC504	8-759-145-58	µPC4558C
IC701, 801	8-759-101-74	CX174
IC702	8-759-145-58	µPC4558C
IC951	8-759-994-32	TMS1943N2L
IC1001	8-759-140-69	µPD4049C
IC1002	8-759-147-42	µPD547C042
IC1003	8-759-904-69	MSM4069
IC1004	8-759-959-53	MSM5953
IC1401	8-759-926-01	S2601
IC1402,1403	8-759-945-14	MSM4514
IC1404–IC1407	8-759-960-43	SN76043N
IC1408–IC1410	8-759-240-78	TC4078BP
IC1411–IC1413	8-759-140-23	µPD4023C
IC1414,1415	8-759-140-81	µPD4081C
IC1416–IC1418	8-759-140-71	µPD4071C
IC1419–IC1423	8-759-140-11	µPD4011C
IC1424,1425	8-759-140-01	µPD4001C
IC1426–IC1429	8-759-140-49	µPD4049C
IC1430,1431	8-759-140-50	µPD4050C
IC2101	8-759-958-11	MSM5811

Ref. No.	*Part No.*	*Description*
IC2102,2103	8-759-145-58	μPC4558C
IC2201,2202	8-759-145-58	μPC4558C
IC3001	8-750-690-00	CX069
IC3002	8-759-145-58	μPC4558C

Diodes

Ref. No.	*Part No.*	*Description*
D001	8-719-305-15	GH3F
D002	8-719-815-55	1S1555
D003	8-719-812-41	TLR124
D004–006	8-719-103-03	SE303A
D051	8-719-100-33	PH302A
D052, 053	8-719-026-11	1T261
D101, 102	8-719-100-81	1SV118
D103–105	8-719-815-55	1S1555
D106–110	8-719-909-24	GL9NG521
D111	8-719-909-21	GL9PR21
D113, 115	8-719-200-02	10E2 (AEP, UK model)
D116, 117	8-719-815-55	1S1555
D301–306	8-719-815-55	1S1555
D351–355	8-719-909-21	GL9PR21
D356	8-719-931-07	EQB01-07
D371	8-719-909-24	GL9NG521
D372	8-719-909-21	GL9PR21
D401–409	8-719-815-55	1S1555
D410, 411	8-719-156-25	RD5.6EB2Z
D412–415	8-719-815-55	1S1555
D501	8-719-815-55	1S1555 (TONE BOARD)
D501, 601	8-719-931-21	EQB01-02 (POWER BOARD)
D502–506	8-719-815-55	1S1555
D602	8-719-931-07	EQB01-07
D509–512	8-719-815-55	1S1555
D701, 801 D702, 802	8-719-815-55	1S1555
D703, 803 D704, 804	8-719-422-21	1T22AM
D705, 805	8-719-815-55	1S1555
D706	8-719-812-41	TLR124

Ref. No.	*Part No.*	*Description*
D707, 807 D708, 808	8-719-815-55	1S1555
⚠ D901–904	8-719-911-55	U05G
D905	8-719-931-21	EQB01-21
⚠ D906–909	8-719-200-02	10E2
D910, 911	8-719-930-11	EQB01-11Z
⚠ D912–920	8-719-200-02	10E2
D921	8-719-930-11	EQB01-11Z
D923	8-719-931-32	EQB01-32
D924	8-719-931-06	EQB01-06
D925	8-719-930-11	EQB01-11Z
D950, 951, D953	8-719-815-55	1S1555
D955, 956	8-719-909-24	GL9NG521
D960	8-719-931-06	EQB01-06
D1001	8-719-200-02	10E2
D1002	8-719-815-55	1S1555
D1004	8-719-815-55	1S1555
D1006– D1011	8-719-815-55	1S1555
D1012– D1016	8-719-200-02	10E2
D1017– D1021	8-719-815-55	1S1555
D1022	8-719-101-11	SR110
D1027	8-719-815-55	1S1555
D1029	8-719-909-04	GL9N03DS
D1032– D1034	8-719-815-55	1S1555
D1101	8-719-815-55	1S1555
D1401– D1410	8-719-815-55	1S1555
D2101,2102	8-719-931-18	EQB01-18
D2103	8-719-815-55	1S1555
D2201– D2203	8-719-815-55	1S1555
D3001	8-719-910-65	HZ6B2L

CAPACITORS

All capacitors are in μF and ceramic unless otherwise noted. 50WV or less are not indicated except for electrolytics and tantalums. Common capacitors are omitted. Refer to the lists on page 142 and 143 for their part numbers.

p : μμF, elect : electrolytic

Ref. No.	*Part No.*	*Description*		
C254, 255	1-123-234-00	10		elect (nonpolarized)
C303	1-101-797-00	0.1		
C304	1-101-798-00	0.2		
C305	1-101-797-00	0.1		
C306, 307	1-101-798-00	0.2		
C360	1-161-025-00	0.1 (AEP, UK model)		
C361, 362	1-161-025-00	0.1		
C406	1-123-223-00	1	50V	elect (nonpolarized)
C415	1-123-230-00	2.2	50V	elect (nonpolarized)
C720, 820	1-131-454-00	0.33	16V	tantalum
C905	⚠1-130-455-00	0.01 (AEP, UK model)	250V	film
C947	1-123-230-00	2.2	50V	elect (nonpolarized)
C2103,2104	1-102-491-00	51p		
C2106	1-131-454-00	0.33	16V	tantalum
C2107	1-131-452-00	0.15	16V	tantalum
C2108	1-101-006-00	0.047		
C2110	1-130-140-00	0.039	100V	film
CP901	⚠1-102-355-00	0.01	500V	
CT101	1-141-171-XX	Trimmer		
CT102,103	1-141-171-XX	Trimmer (AEP, UK model)		
CT104	1-141-171-XX	Trimmer		
CT701,801	1-141-215-XX	Trimmer, record bias		

RESISTORS

All resistors are in ohms. Common ¼W carbon resistors are omitted. Refer to the list on the last page for their part numbers.

RESISTORS

All resistors are in ohms. Common ¼W carbon resistors are omitted. Refer to the list on page 143 for their part numbers.

Ref. No.	*Part No.*	*Description*		
R123	⚠1-213-084-00	100	1W	fusible
R268, 269	⚠1-217-422-00	1 (AEP, UK model)	½W	fusible
R506	⚠1-213-074-00	39	1W	fusible
R535, 635	⚠1-212-958-00	10	½W	fusible
R552	⚠1-212-885-00	150	¼W	fusible
R554	⚠1-212-885-00	150	¼W	fusible
R908	⚠1-212-972-00	39	½W	fusible
R919	⚠1-212-857-00	10	¼W	fusible
R923, 924	⚠1-213-084-00	100	1W	fusible
R926	⚠1-217-431-00	5.6	½W	fusible
R1034,1035	⚠1-212-857-00	10	¼W	fusible
R1061–R1067	⚠1-212-986-00	150	½W	fusible
R2157	⚠1-213-068-00	22	1W	fusible
R2159	⚠1-212-976-00	56	½W	fusible
R2161	⚠1-213-068-00	22	1W	fusible
RV001	1-226-237-00	20k-B, adjustable; (remote control unit)		
RV100	1-226-720-00	20k-D, variable; ANTISKATING		
RV201	1-226-235-00	5k-B, adjustable; VCO		
RV202	1-226-686-00	470k-B, adjustable; FM Stereo Separation		
RV401,402	1-226-238-00	50k-B, adjustable; Return Detection/ Horizontal Offset		
RV501,601 RV502,602	1-226-680-00	250k-A, variable; BASS/TREBLE		
RV503,504	1-226-679-00	10k-B/250k-W, variable; BALANCE/ PRESET VOL		
RV505	1-226-239-00	100k-B, adjustable; Volume Indicator		
RV701, 801	1-226-677-00	20k-A, variable; REC LEVEL		
RV702, 802	1-226-237-00	20k-B, adjustable; Playback Level		
RV703, 803	1-226-238-00	50k-B, adjustable; Record Level		
RV901	1-226-235-00	5k-B, adjustable; Control Unit Charging		
RV951	1-226-686-00	470k-B, adjustable; Dimmer		

Ref. No.	*Part No.*	*Description*
RV1401	1-226-741-00	50k-B, adjustable; Control Unit Receiving Clock
RV1402, RV1403	1-226-664-00	2k-B, adjustable; AM Frequency Coverage
RV1404	1-226-663-00	1k-B, adjustable; AM Frequency Coverage
RV1405	1-226-664-00	2k-B, adjustable; FM Frequency Coverage
RV1406, RV1407	1-226-663-00	1k-B, adjustable; FM Frequency Coverage
RV2101	1-226-741-00	50k, adjustable; X'tal Lock
RV2102	1-226-234-11	2k-B, adjustable; GAIN
RV2103, RV2104	1-226-237-00	20k-B, adjustable; OFFSET
RV2202, RV2203	1-226-238-00	50k-B, adjustable; Lead-In
RV3001	1-226-433-00	50k-B, adjustable; TAPE SPEED

MISCELLANEOUS

Ref. No.	*Part No.*	*Description*
CFU101	1-527-481-00	AM Filter, ceramic
CNJ001	9-981-367-00	Plug, 5P
CNP001	1-526-563-00	Socket, FM antenna (UK model)
CNP501 CNP601 CNP502 CNP602	1-507-532-00	Jack, AUX/REC OUT
CP501, 502	1-226-693-00	Photocoupler
F901	⚠1-532-203-00	Fuse, T2A (AEP, UK model)
HE	8-825-724-00	Head, erase; EF201-36
HFG	1-543-093-00	Head, speed detection
HRP	8-829-377-00	Head, record/playback
IFT101	1-404-232-00	AM Coil, IF
J501	1-507-649-00	Jack, HEADPHONES
J701, 801	1-507-666-00	Jack, MIC
L101	1-401-834-00	Coil, LW ANT (AEP model)
L102, 103	1-401-856-00	Antenna, ferrite-rod (AEP, UK model)
L102	1-401-856-21	Antenna, ferrite-rod (E model)
L104	1-405-891-00	Coil, OSC LW (AEP, UK model)
L105	1-405-890-00	Coil, MW OSC
L110	1-404-157-00	Transformer, discriminator
L111	1-407-741-00	18μH, microinductor
L112	1-407-169-XX	100μH, microinductor
L113	1-407-178-XX	1μH, microinductor
L201–204	1-407-963-00	15mH, microinductor
L702, 802	1-407-878-00	27mH, microinductor
L901	1-407-488-00	470μH, microinductor
L1001	1-405-800-00	OSC
L1002	1-408-209-00	1mH, microinductor
PC951	1-800-779-00	Photoconductive Cell
PL350–358	1-518-268-00	Lamp, PHOTO/FUNCTION (FUNCTION INDICATOR BOARD)
PL351	1-518-323-00	Lamp, 13V 200mA (SIGNAL INDICATOR BOARD)
PL901	1-518-325-00	Lamp
PL903	1-518-403-00	Lamp, 13V 140mA
PL1001– PL1007	1-518-268-00	Lamp, 4.5V 40mA
PM1	1-454-222-11	Solenoid, brake
PM2	1-454-222-21	Solenoid, pinch roller
RY901	⚠1-515-357-00	Relay (AEP, UK model)
RY901	⚠1-515-345-00	Relay (E model)
S3	1-514-346-00	Switch, leaf; AFC
S11	1-553-112-00	Switch, miniature; BALANCE
S101	1-552-334-00	Switch, antenna select (AEP model)
S102	1-553-040-00	Switch, solenoid; band select (AEP, UK model)
S301–307	1-552-539-00	Switch, keyboard; START, STOP, REC SYNC, IN-ARM-OUT, REPEAT, SPEED
S361	1-553-102-00	Switch, slide; MANUAL TUNER FUNCTION (AEP, UK model)
S361	1-553-287-00	Switch, slide; MANUAL TUNER FUNCTION (E model)
S501	1-553-103-00	Switch, pushbutton; STAND BY/ SPEAKER/MODE/ISS-1/LOUDNESS
S701, 801	1-553-040-00	Switch, solenoid; record/playback
S702, 802	1-553-050-00	Switch, slide; EQ
S703, 803	1-553-049-00	Switch, slide; DOLBY NR
S704	1-553-050-00	Switch, slide; BIAS
S705	1-553-102-00	Switch, slide; ISS-2
S901	⚠1-552-535-00	Voltage Selector (E model)

Ref. No.	*Part No.*	*Description*
S951, 952	1-552-737-00	Switch, pushbutton; TIMER, SLEEP
S953	1-226-694-00	Switch, 50Hz/60Hz SELECT
S954–957	1-552-539-00	Switch, keyboard; SLOW, FAST, CLOCK SET, TIMER/SLEEP SET
S1001	1-552-268-00	Switch, slide; record enable sensor
S1002	1-553-099-00	Switch, micro; cassette lead sensor
T001	1-417-014-31	Transformer, antenna matching (UK model)
T901	⚠1-446-500-00	Transformer, power (E model)
T901	⚠1-446-560-00	Transformer, power (AEP, UK model)
T902	⚠1-446-561-00	Transformer, power (AEP model)
T902	⚠1-446-564-00	Transformer, power (UK model)
T902	⚠1-446-709-00	Transformer, power (E model)
TH001	1-800-071-XX	Thermister, S300-01
TM101	1-536-560-00	Terminal, ANTENNA
TM501,502	1-536-566-00	Terminal, SPEAKER A/B
X2101	1-527-348-00	Crystal Oscillator
	A-4608-141-A	Motor Ass'y, phono
	including;	
	X-4852-002-0	Bearing Ass'y
	1-462-159-00	Coil, motor
	1-587-197-00	Printed Circuit Board, motor
	4-852-007-00	Holder (A), thrust
	4-852-085-00	Holder, bearing
	X-2089-618-1	Lead Wire (w/terminal), red
	X-2089-618-2	Lead Wire (w/terminal), green
	X-2089-618-3	Lead Wire (w/terminal), white
	X-2089-618-4	Lead Wire (w/terminal), blue
	1-452-194-00	Magnet (H)
	1-452-195-00	Magnet (V)
	1-452-196-00	Magnet (R)
	1-454-236-00	Solenoid (C)
	1-454-237-00	Solenoid (D)
	1-454-238-00	Solenoid (S)
	1-454-239-00	Solenoid (V)
	1-462-159-00	Coil, motor; phono
	1-463-287-00	FM Front End
	1-464-099-00	Bias Osc Unit
	1-464-111-00	Receiver, infrared ray

Ref. No.	*Part No.*	*Description*
	1-517-079-00	Socket, lamp
	1-518-399-00	Lamp, 28V 200mA
	1-519-179-00	Tube, fluorescent (UK model)
	1-519-191-00	Tube, fluorescent (AEP, E model)
	1-520-407-00	Meter, REC LEVEL & POWER
	1-527-278-XX	Filter, solid state
	⚠1-533-131-00	Holder, fuse (AEP, UK model)
	⚠1-534-817-XX	Cord, power (AEP model)
	1-549-074-00	Stylus, ND134G
	1-549-088-00	Cartridge, VL34G
	including;	
	1-549-074-00	Stylus, ND134G
	⚠1-551-188-31	Cord, power (E model)
	⚠1-551-884-31	Cord, power (UK model)
	1-555-145-00	Lead Wire with connector
	1-560-297-00	Connector, control unit
	1-561-294-11	Connector, neck cylinder
	1-800-981-11	Interrupter, photo

COMPLETE CIRCUIT BOARDS

	♦ A-2020-060-A	Tape Cassette Servo Amp
	♦ A-4351-175-A	Tuner (UK model)
	♦ A-4351-176-A	Tuner (AEP model)
	♦ A-4351-182-A	Tuner (E model)
	♦ A-4375-128-A	Tone
	♦ A-4388-203-A	Power (UK model)
	♦ A-4388-204-A	Power (AEP model)
	♦ A-4388-215-A	Power (E model)
	♦ A-4393-008-A	Cassette
	♦ A-4409-275-A	Tape Cassette System Control
	♦ A-4619-135-A	Phono Servo Amp
	♦ A-4644-053-A	Phono System Control

PRINTED CIRCUIT BOARDS

	♦ 1-464-112-00	Remote Control Logic
	♦ 1-587-197-00	Motor
	♦ 1-600-393-00	Servo
	♦ 1-601-223-00	PHONO
	♦ 1-601-227-00	IFC

Ref. No.	Part No.	Description
	♠ 1-601-228-00	Size Sens
	♠ 1-601-543-00	Mic (A)
	♠ 1-601-544-00	Mic (B)
	♠ 1-601-545-00	Record Volume
	♠ 1-601-546-00	METER
	♠ 1-601-562-00	Function Display
	♠ 1-601-563-00	Photo Sensor
	♠ 1-601-567-00	Function Indicator
	♠ 1-601-568-00	Receive Indicator
	♠ 1-601-569-00	Timer (B)
	♠ 1-601-570-00	Timer (A)
	♠ 1-601-572-00	Phono Switch
	♠ 1-601-573-00	Signal Indicator
	♠ 1-601-574-00	Headphone
	♠ 1-601-575-00	EQ Function
	♠ 1-601-576-00	Lamp
	♠ 1-601-577-00	AMS
	♠ 1-601-578-00	Manual Switch
	♠ 1-601-905-00	Timing
	♠ 9-981-364-00	Switch
	♠ 9-981-365-00	Transmitter and LED

Ref. No. *Part No.* *Description*

ACCESSORIES AND PACKING MATERIALS

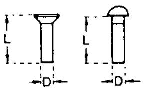
Part No.	Description
1-463-302-00	Control Unit
1-501-161-00	Antenna, feeder
⚠1-526-565-00	Adaptor, AC plug (E model)
⚠1-528-077-00	Battery, rechargeable
3-701-630-00	Bag, polyethylene
3-701-806-00	Adaptor, 45 (E model)
3-783-010-11	Manual, instruction (AEP model)
3-783-010-41	Manual, instruction (UK model)
3-783-010-51	Manual, instruction (E model)
3-794-123-11	Label, caution
3-794-628-11	Leaflet
4-827-486-00	Washer, plastic
4-834-105-00	Sheet, polyethylene
4-834-720-00	Cover, turntable
4-853-189-00	Screw
4-862-043-00	Cushion, arm
4-864-608-00	Pushbutton (A)
4-864-609-00	Pushbutton (B)
4-864-616-00	Panel, control
4-866-072-11	Sheel, turntable
4-866-151-00	Carton
4-866-152-00	Cushion, upper; remote control unit
4-866-153-00	Cushion, lower; remote control unit
4-866-156-00	Sheet, protection, deck panel
4-866-157-00	Sheet, protection, deck panel
4-866-158-00	Cushion, upper (front)
4-866-159-00	Cushion, upper (rear)
4-866-160-00	Cushion, lower (front)
4-866-161-00	Cushion, lower (rear)
4-866-162-00	Holder, turntable
4-866-163-00	Bag, protection (main)
4-866-169-00	Sheet, protection
4-866-170-00	Holder, knob
4-866-175-00	Sheet, polyethylene (main)

1/4 WATT CARBON RESISTORS

Ω	*Part No.*	Ω	*Part No.*	Ω	*Part No.*	Ω	*Part No.*	Ω	*Part No.*	Ω	*Part No.*	Ω	*Part No.*
1.0	1-246-401-00	10	1-246-425-00	100	1-246-449-00	1.0k	1-246-473-00	10k	1-246-497-00	100k	1-246-521-00	1.0M	1-246-545-00
1.1	1-246-402-00	11	1-246-426-00	110	1-246-450-00	1.1k	1-246-474-00	11k	1-246-498-00	110k	1-246-522-00	1.1M	1-210-814-00
1.2	1-246-403-00	12	1-246-427-00	120	1-246-451-00	1.2k	1-246-475-00	12k	1-246-499-00	120k	1-246-523-00	1.2M	1-210-815-00
1.3	1-246-404-00	13	1-246-428-00	130	1-246-452-00	1.3k	1-246-476-00	13k	1-246-500-00	130k	1-246-524-00	1.3M	1-210-816-00
1.5	1-246-405-00	15	1-246-429-00	150	1-246-453-00	1.5k	1-246-477-00	15k	1-246-501-00	150k	1-246-525-00	1.5M	1-210-817-00
1.6	1-246-406-00	16	1-246-430-00	160	1-246-454-00	1.6k	1-246-478-00	16k	1-246-502-00	160k	1-246-526-00	1.6M	1-210-818-00
1.8	1-246-407-00	18	1-246-431-00	180	1-246-455-00	1.8k	1-246-479-00	18k	1-246-503-00	180k	1-246-527-00	1.8M	1-210-819-00
2.0	1-246-408-00	20	1-246-432-00	200	1-246-456-00	2.0k	1-246-480-00	20k	1-246-504-00	200k	1-246-528-00	2.0M	1-210-820-00
2.2	1-246-409-00	22	1-246-433-00	220	1-246-457-00	2.2k	1-246-481-00	22k	1-246-505-00	220k	1-246-529-00	2.2M	1-210-821-00
2.4	1-246-410-00	24	1-246-434-00	240	1-246-458-00	2.4k	1-246-482-00	24k	1-246-506-00	240k	1-246-530-00	2.4M	1-244-754-00
2.7	1-246-411-00	27	1-246-435-00	270	1-246-459-00	2.7k	1-246-483-00	27k	1-246-507-00	270k	1-246-531-00	2.7M	1-244-755-00
3.0	1-246-412-00	30	1-246-436-00	300	1-246-460-00	3.0k	1-246-484-00	30k	1-246-508-00	300k	1-246-532-00	3.0M	1-244-756-00
3.3	1-246-413-00	33	1-246-437-00	330	1-246-461-00	3.3k	1-246-485-00	33k	1-246-509-00	330k	1-246-533-00	3.3M	1-244-757-00
3.6	1-246-414-00	36	1-246-438-00	360	1-246-462-00	3.6k	1-246-486-00	36k	1-246-510-00	360k	1-246-534-00	3.6M	1-244-758-00
3.9	1-246-415-00	39	1-246-439-00	390	1-246-463-00	3.9k	1-246-487-00	39k	1-246-511-00	390k	1-246-535-00	3.9M	1-244-759-00
4.3	1-246-416-00	43	1-246-440-00	430	1-246-464-00	4.3k	1-246-488-00	43k	1-246-512-00	430k	1-246-536-00	4.3M	1-244-760-00
4.7	1-246-417-00	47	1-246-441-00	470	1-246-465-00	4.7k	1-246-489-00	47k	1-246-513-00	470k	1-246-537-00	4.7M	1-244-761-00
5.1	1-246-418-00	51	1-246-442-00	510	1-246-466-00	5.1k	1-246-490-00	51k	1-246-514-00	510k	1-246-538-00	5.1M	1-244-762-00
5.6	1-246-419-00	56	1-246-443-00	560	1-246-467-00	5.6k	1-246-491-00	56k	1-246-515-00	560k	1-246-539-00		
6.2	1-246-420-00	62	1-246-444-00	620	1-246-468-00	6.2k	1-246-492-00	62k	1-246-516-00	620k	1-246-540-00		
6.8	1-246-421-00	68	1-246-445-00	680	1-246-469-00	6.8k	1-246-493-00	68k	1-246-517-00	680k	1-246-541-00		
7.5	1-246-422-00	75	1-246-446-00	750	1-246-470-00	7.5k	1-246-494-00	75k	1-246-518-00	750k	1-246-542-00		
8.2	1-246-423-00	82	1-246-447-00	820	1-246-471-00	8.2k	1-246-495-00	82k	1-246-519-00	820k	1-246-543-00		
9.1	1-246-424-00	91	1-246-448-00	910	1-246-472-00	9.1k	1-246-496-00	91k	1-246-520-00	910k	1-246-544-00		

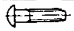
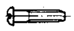
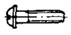
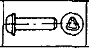
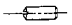
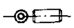
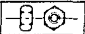
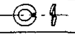
HARDWARE NOMENCLATURE

Screw: – P 3 x 10
L: Length in mm
D: Diameter in mm
Type of head
Indicated slotted-head only.
Unless otherwise indicated, it means cross-recessed head (Phillips type).



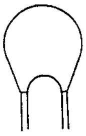
Nut, Washer, Retaining ring:
N 3
Diameter of usable screw or shaft
Reference designation

Reference Designation	Shape	Description	Remarks
		SCREWS	
P		pan-head screw	binding-head (B) screw for replacement
PWH		pan-head screw with washer face	binding-head (B) screw and flat washer for replacement
PS PSP		pan-head screw with spring washer	binding-head (B) screw and spring washer for replacement
PSW PSPW		pan-head screw with spring and flat washers	binding-head (B) screw and spring and flat washers for replacement
R		round-head screw	binding-head (B) screw for replacement
K		flat-countersunk-head screw	
RK		oval-countersunk-head screw	
B		binding-head screw	
T		truss-head screw	binding-head (B) screw for replacement
F		flat-fillister-head screw	
RF		fillister-head screw	
BV		braizer-head screw	

Reference Designation	Shape	Description	Remarks
		SELF-TAPPING SCREWS	
TA		self-tapping screw	ex: TA, P 3 x 10
PTP		pan-head self-tapping screw	binding-head self-tapping (TA, B) screw for replacement
PTPWH		pan-head self-tapping screw with washer face	binding-head self tapping (TA, B) screw and flat washer for replacement
PTTWH		pan-head thread-rolling screw with washer face	binding-head (B) screw and flat washer for replacement
		SET SCREWS	
SC		set screw	
SC		hexagon-socket set screw	ex: SC 2.6 x 4, hexagon socket
		NUT	
N		nut	
		WASHERS	
W		flat washer	
SW		spring washer	
LW		internal-tooth lock washer	ex: LW3, internal
LW		external-tooth lock washer	ex: LW3, external
		RETAINING RINGS	
E		retaining ring	
G		grip-type retaining ring	

MYLAR CAPACITORS

CAP. (μF)	RATING 50 VOLT. PART No.	100 VOLT. PART No.	200 VOLT. PART No.	CAP. (μF)	50 VOLT. PART No.	100 VOLT. PART No.	200 VOLT. PART No.	CAP. (μF)	50 VOLT. PART No.	100 VOLT. PART No.	200 VOLT. PART No.
0.001	1-108-227-00	1-108-365-00	1-108-409-00	0.01	1-108-239-00	1-108-377-00	1-108-421-00	0.1	1-108-251-00	1-108-389-00	1-108-433-00
0.0012	1-108-351-00	1-108-366-00	1-108-410-00	0.012	1-108-357-00	1-108-378-00	1-108-422-00	0.12	1-108-363-00	1-108-390-00	1-108-434-00
0.0015	1-108-228-00	1-108-367-00	1-108-411-00	0.015	1-108-240-00	1-108-379-00	1-108-423-00	0.15	1-108-252-00	1-108-391-00	1-108-435-00
0.0018	1-108-352-00	1-108-368-00	1-108-412-00	0.018	1-108-358-00	1-108-380-00	1-108-424-00	0.18	1-108-364-00	1-108-392-00	1-108-436-00
0.0022	1-108-230-00	1-108-369-00	1-108-413-00	0.022	1-108-242-00	1-108-381-00	1-108-425-00	0.22	1-108-254-00	1-108-393-00	1-108-437-00
0.0027	1-108-353-00	1-108-370-00	1-108-414-00	0.027	1-108-359-00	1-108-382-00	1-108-426-00	0.27	1-108-854-00	–	–
0.0033	1-108-232-00	1-108-371-00	1-108-415-00	0.033	1-108-244-00	1-108-383-00	1-108-427-00	0.33	1-108-855-00	–	–
0.0039	1-108-354-00	1-108-372-00	1-108-416-00	0.039	1-108-360-00	1-108-384-00	1-108-428-00	0.39	1-108-856-00	–	–
0.0047	1-108-234-00	1-108-373-00	1-108-417-00	0.047	1-108-246-00	1-108-385-00	1-108-429-00	0.47	1-108-857-00	–	–
0.0056	1-108-355-00	1-108-374-00	1-108-418-00	0.056	1-108-361-00	1-108-386-00	1-108-430-00				
0.0068	1-108-237-00	1-108-375-00	1-108-419-00	0.068	1-108-249-00	1-108-387-00	1-108-431-00				
0.0082	1-108-356-00	1-108-376-00	1-108-420-00	0.082	1-108-362-00	1-108-388-00	1-108-432-00				

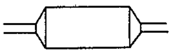


TANTALUM CAPACITORS

RATING →: Use the high voltage rated one.

CAP. (μF)	3.15 VOLT. PART No.	6.3 VOLT. PART No.	10 VOLT. PART No.	16 VOLT. PART No.	20 VOLT. PART No.	25 VOLT. PART No.	35 VOLT. PART No.
0.01					→	→	1-131-396-00
0.015						→	1-131-397-00
0.022						→	1-131-398-00
0.033						→	1-131-399-00
0.047						→	1-131-400-00
0.068					→	→	1-131-401-00
0.1					→	→	1-131-402-00
0.15					→	→	1-131-403-00
0.22					→	→	1-131-404-00
0.33					→	1-131-409-00	1-131-405-00
0.47	–	–	–	–	1-131-412-00	→	1-131-406-00
0.68	–	–	–	1-131-415-00	→	1-131-410-00	1-131-407-00
1.0	–	–	1-131-418-00	–	1-131-413-00	→	1-131-408-00
1.5	–	1-131-421-00	–	1-131-416-00	→	1-131-411-00	1-131-348-00
2.2	1-131-424-00	–	1-131-419-00	–	1-131-414-00	1-131-355-00	1-131-349-00
3.3	–	1-131-422-00	–	1-131-417-00	1-131-362-00	1-131-356-00	1-131-350-00
4.7	1-131-425-00	–	1-131-420-00	1-131-369-00	1-131-363-00	1-131-357-00	1-131-351-00
6.8	–	1-131-423-00	1-131-376-00	1-131-370-00	1-131-364-00	1-131-358-00	1-131-352-00
10	1-131-426-00	1-131-383-00	1-131-377-00	1-131-371-00	1-131-365-00	1-131-359-00	1-131-353-00
15	1-131-390-00	1-131-384-00	1-131-378-00	1-131-372-00	1-131-366-00	1-131-360-00	–
22	1-131-391-00	1-131-385-00	1-131-379-00	1-131-373-00	1-131-367-00		
33	1-131-392-00	1-131-386-00	1-131-380-00	1-131-374-00			
47	1-131-393-00	1-131-387-00	1-131-381-00	–			
68	1-131-394-00	1-131-388-00	–	–			
100	1-131-395-00	–	–	–			

TANTALUM CAPACITORS



CAP. (μF)	RATING 3 VOLT. PART No.	6.3 VOLT. PART No.	10 VOLT. PART No.	16 VOLT. PART No.	20 VOLT. PART No.	35 VOLT. PART No.
0.033						1-131-273-00
0.047						1-131-274-00
0.068						1-131-275-00
0.1						1-131-276-00
0.15						1-131-277-00
0.22			–	–	1-131-262-00	1-131-278-00
0.33			–	–	1-131-263-00	1-131-279-00
0.47			1-131-169-00	–	1-131-264-00	1-131-280-00
0.68			–	1-131-258-00	1-131-265-00	1-131-281-00
1.0			1-131-254-00	–	1-131-266-00	1-131-282-00
1.5		1-131-250-00	–	–	1-131-267-00	1-131-283-00
2.2		–	–	1-131-259-00	1-131-268-00	1-131-284-00
3.3		–	1-131-255-00	–	1-131-269-00	–
4.7		1-131-251-00	1-131-171-00	–	1-131-270-00	–
6.8		–	–	1-131-260-00	1-131-271-00	–
10	–	–	1-131-256-00	–	1-131-272-00	–
15	–	1-131-252-00	–	1-131-261-00		
22	–	–	1-131-257-00	–		
33	1-131-176-00	1-131-253-00	1-131-173-00	–		
47	1-131-288-00	1-131-174-00	–	–		
100	1-131-177-00					

ELECTROLYTIC CAPACITORS

RATING → : Use the high voltage rated one.

CAP. (μF)	6.3 VOLT.	10 VOLT.	16 VOLT.	25 VOLT.	35 VOLT.	50 VOLT.
	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.
0.47					→	1-121-726-00
1.0					→	1-121-391-00
2.2					→	1-121-450-00
3.3	→	→	→	1-121-392-00	→	1-121-393-00
4.7	→	→	→	1-121-395-00	→	1-121-396-00
10	→	→	1-121-651-00	1-121-398-00	→	1-121-738-00
22	→	→	1-121-479-00	1-121-480-00	1-121-662-00	1-121-152-00
33	→	→	1-121-403-00	1-121-404-00	1-121-652-00	1-121-405-00
47	→	1-121-352-00	1-121-409-00	1-121-410-00	1-121-653-00	1-121-411-00
100	→	1-121-414-00	1-121-415-00	1-121-416-00	1-121-357-00	1-121-417-00
220	1-121-419-00	1-121-420-00	1-121-421-00	1-121-422-00	1-121-261-00	1-121-423-00
330	1-121-751-00	1-121-805-00	1-121-521-00	1-121-654-00	1-121-655-00	1-121-656-00
470	1-121-424-00	1-121-425-00	1-121-426-00	1-121-733-00	1-121-361-00	1-121-810-00
1000	–	1-121-736-00	1-121-245-00	1-121-657-00	1-121-388-00	1-123-061-00
2200	1-121-658-00	1-121-659-00	1-121-660-00	1-123-067-00	1-121-984-00	–
3300	1-121-661-00	1-123-075-00	1-123-071-00	–	–	–

CAP. (μF)	100 VOLT.	160 VOLT.	250 VOLT.	350 VOLT.
	PART No.	PART No.	PART No.	PART No.
0.47	–	–	–	–
1.0	1-123-249-00	1-123-252-00	1-123-003-00	1-121-168-00
2.2	1-123-250-00	1-123-026-00	–	1-123-028-00
3.3	1-121-995-00	–	1-123-004-00	1-123-006-00
4.7	1-123-255-00	1-121-246-00	1-121-759-00	1-123-007-00
10	1-121-126-00	1-121-999-00	1-123-254-00	1-123-008-00
22	1-121-996-00	1-123-253-00	1-123-005-00	1-123-022-00
33	1-121-997-00	1-121-757-00	–	–
47	1-123-251-00	1-121-919-00	–	–
100	1-123-084-00	–	–	–

CERAMIC CAPACITORS

RATING

CAP. (pF)	50 VOLT.	CAP. (pF)	50 VOLT.	CAP. (pF)	50 VOLT.	CAP. (μF)	50 VOLT.
	PART No.		PART No.		PART No.		PART No.
0.5	1-101-837-00	22	1-102-959-00	150	1-101-361-00	0.001	1-102-074-00
0.75	1-101-586-00	24	1-102-960-00	160	1-101-367-00	0.0012	1-102-118-00
1.0	1-102-934-00	27	1-102-961-00	180	1-102-976-00	0.0015	1-102-119-00
1.5	1-101-576-00	30	1-102-962-00	200	1-102-977-00	0.0018	1-102-120-00
2.0	1-102-935-00	33	1-102-963-00	220	1-102-978-00	0.0022	1-102-121-00
3	1-102-936-00	36	1-102-964-00	240	1-102-979-00	0.0027	1-102-122-00
4	1-102-937-00	39	1-102-965-00	270	1-102-980-00	0.0033	1-102-123-00
5	1-102-942-00	43	1-102-966-00	300	1-102-981-00	0.0039	1-102-124-00
6	1-102-943-00	47	1-101-880-00	330	1-102-820-00	0.0047	1-102-125-00
7	1-102-944-00	51	1-101-882-00	360	1-102-821-00	0.0056	1-102-126-00
8	1-102-945-00	56	1-101-884-00	390	1-102-822-00	0.0068	1-102-127-00
9	1-102-946-00	62	1-101-886-00	430	1-102-823-00	0.0082	1-102-128-00
10	1-102-947-00	68	1-101-888-00	470	1-102-824-00	0.01	1-102-129-00
11	1-102-948-00	75	1-101-890-00	510	1-101-059-00	0.022	1-101-005-00
12	1-102-949-00	82	1-102-971-00	560	1-102-115-00	0.047	1-101-006-00
13	1-102-950-00	91	1-102-972-00	680	1-102-116-00		
15	1-102-951-00	100	1-102-973-00	820	1-102-117-00		
16	1-102-952-00	110	1-102-815-00				
18	1-102-953-00	120	1-102-816-00				
20	1-102-958-00	130	1-101-081-00				

0.001μF = 1,000pF

CERAMIC (SEMICONDUCTOR) CAPACITORS

RATING → : Use the high voltage rated one.

CAP. (μF)	25 VOLT.	50 VOLT.	CAP. (μF)	25 VOLT.	50 VOLT.
	PART No.	PART No.		PART No.	PART No.
0.001	→	1-161-039-00	0.018	1-161-016-00	1-161-054-00
0.0012	→	1-161-040-00	0.022	1-161-017-00	1-161-055-00
0.0015		1-161-041-00	0.027	1-161-018-00	1-161-056-00
0.0018		1-161-042-00	0.033	1-161-019-00	1-161-057-00
0.0022		1-161-043-00	0.039	1-161-010-00	1-161-058-00
0.0027	→	1-161-044-00	0.047	1-161-021-00	1-161-059-00
0.0033	→	1-161-045-00	0.056	→	1-161-060-00
0.0039	→	1-161-046-00	0.068	→	1-161-061-00
0.0047	→	1-161-047-00	0.082	1-161-024-00	1-161-062-00
0.0056	→	1-161-048-00	0.1	1-161-025-00	1-161-063-00
0.0068	→	1-161-049-00			
0.0082	1-161-012-00	1-161-050-00			
0.01	1-161-013-00	1-161-051-00			
0.012	→	1-161-052-00			
0.015	1-161-015-00	1-161-053-00			

HMK-9000

Sony Corporation

© 1980

80J0491-1
Printed in Japan

STEREO MUSIC SYSTEM HMK-9000

AEP Model
UK Model
E Model

No. 1
November, 1980

SUPPLEMENT

File this supplement with the service manual.

CIRCUIT OPERATION

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6	COMMAND Data Readings (PHONO STOP, IN, OUT, Rewind, Fast Forward, Stop: cassette, AMS ▷ , AMS PROGRAM, AMS ◁ , Pause, Record and REC MUTE)	14
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RECORD PLAYER SECTION

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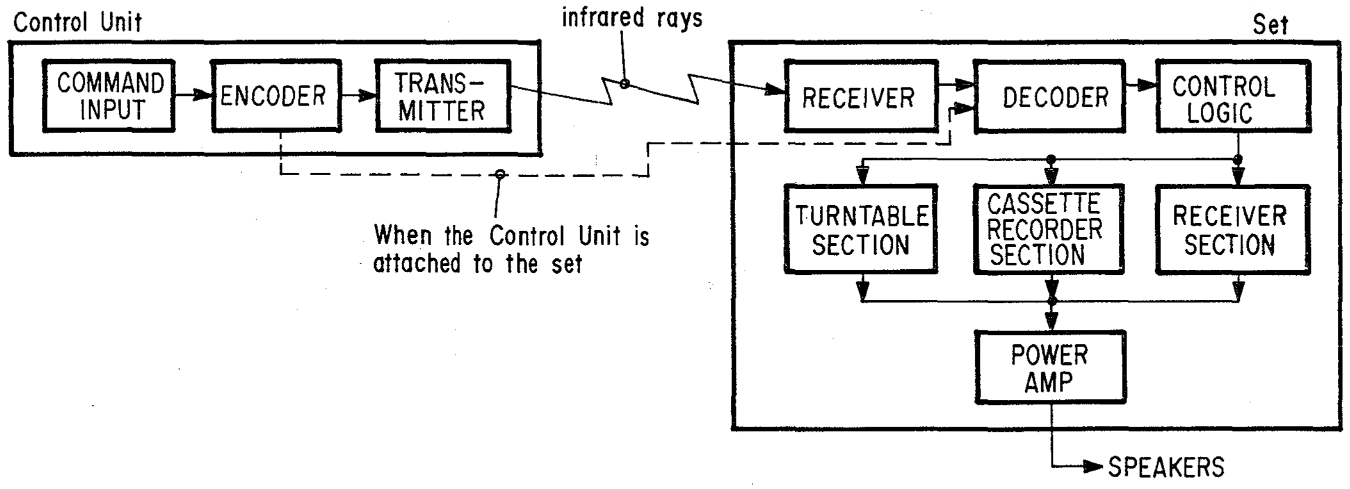
SONY®
SERVICE MANUAL

CONTROL SECTION

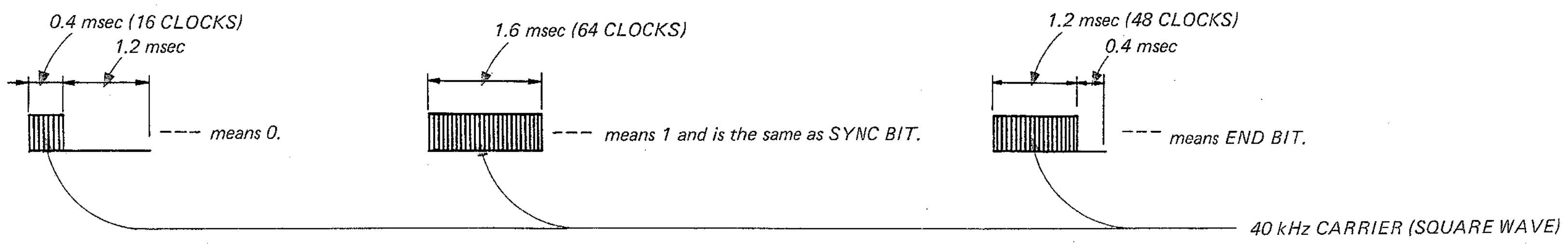
1. Control System

When the Control Unit is used as a remote control unit, the Control Unit controls the set by infrared rays. When the Control Unit is attached to the set, the encoder and the decoder are directly connected, and the rechargeable battery in the Control Unit is charged.

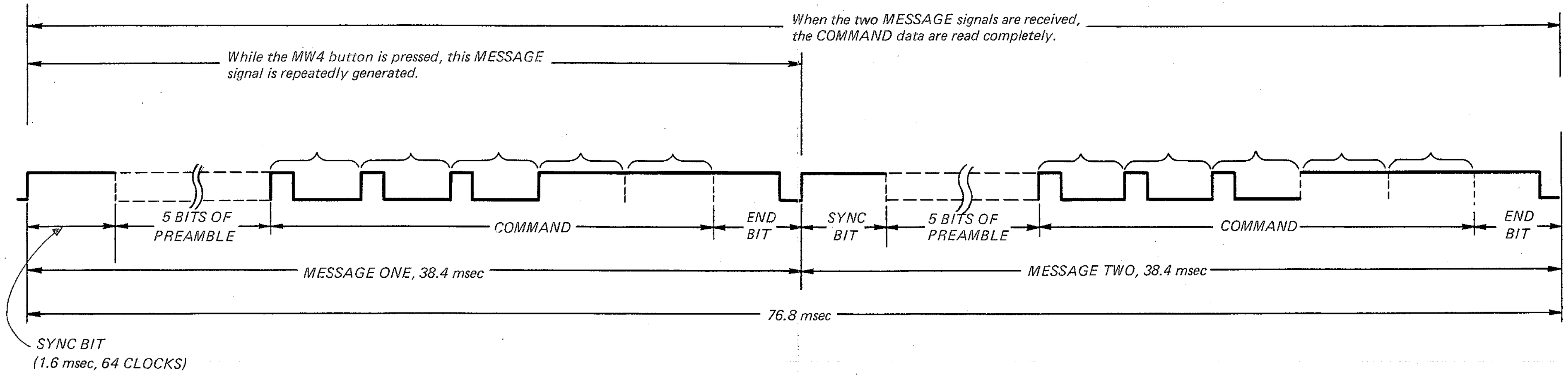


Control Unit
COMMAND INPUT
ENCODER
TRANS-MITTER
infrared rays
Set
RECEIVER
DECODER
CONTROL LOGIC
When the Control Unit is attached to the set
TURNTABLE SECTION
CASSETTE RECORDER SECTION
RECEIVER SECTION
POWER AMP
SPEAKERS

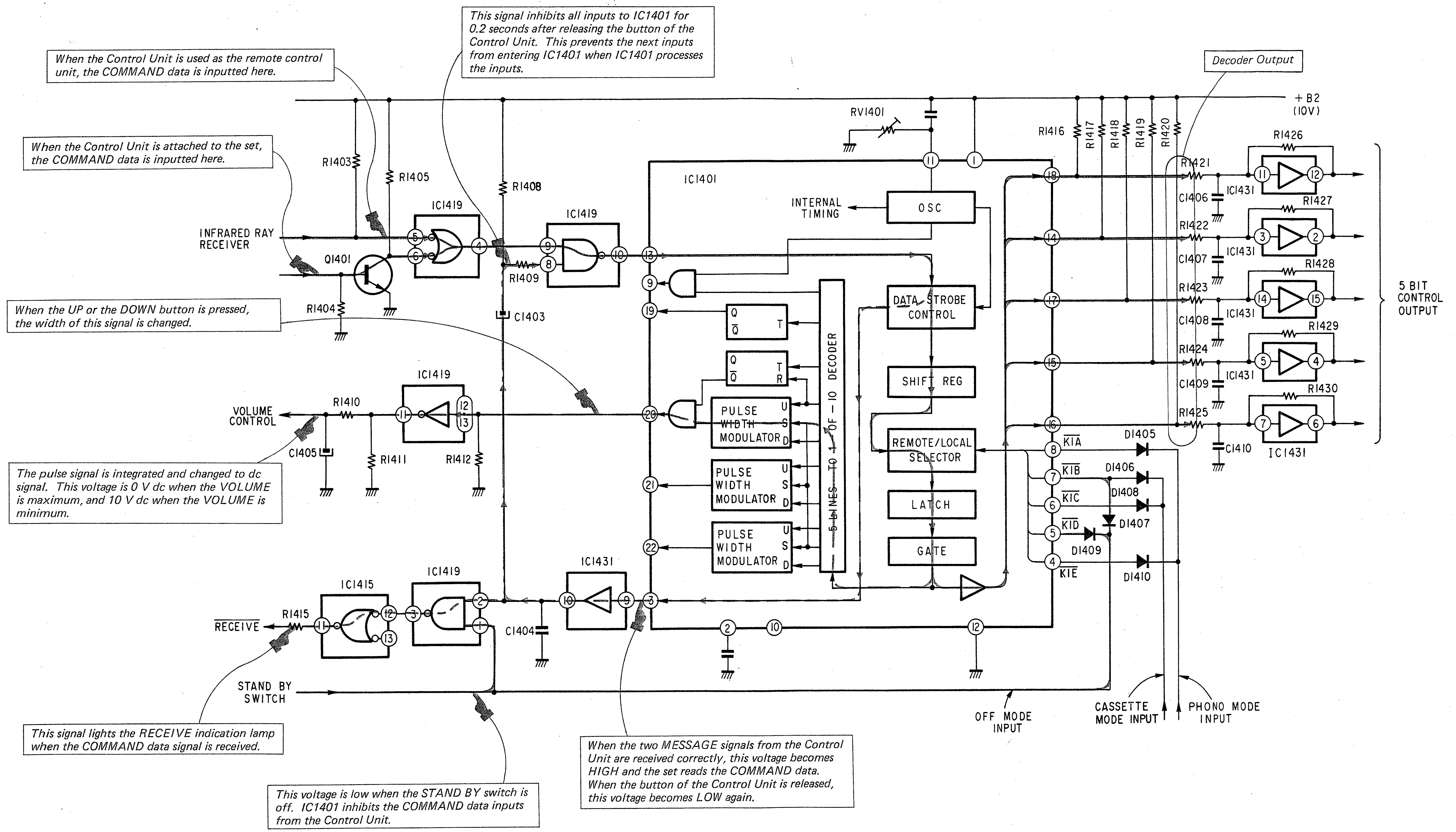
2. Message Format for Remote Control Unit Output


0.4 msec (16 CLOCKS)
1.2 msec
means 0.
1.6 msec (64 CLOCKS)
means 1 and is the same as SYNC BIT.
1.2 msec (48 CLOCKS)
0.4 msec
means END BIT.
40 kHz CARRIER (SQUARE WAVE)

The below waveform means 00011 code (MW4 operation).


When the two MESSAGE signals are received, the COMMAND data are read completely.
While the MW4 button is pressed, this MESSAGE signal is repeatedly generated.
5 BITS OF PREAMBLE
COMMAND
END BIT
SYNC BIT
5 BITS OF PREAMBLE
COMMAND
END BIT
MESSAGE ONE, 38.4 msec
MESSAGE TWO, 38.4 msec
76.8 msec
SYNC BIT
(1.6 msec, 64 CLOCKS)

3. COMMAND Data Reading from Control Unit


+B2
(10V)
RV1401
R1403
R1405
R1408
IC1419
IC1401
INFRARED RAY
RECEIVER
Q1401
R1409
R1404
C1403
INTERNAL
TIMING
OSC
DATA STROBE
CONTROL
SHIFT REG
REMOTE/LOCAL
SELECTOR
LATCH
GATE
5 LINES TO 1 OF – 10 DECODER
Q
Q̄
T
R
PULSE
WIDTH
MODULATOR
U
S
D
VOLUME
CONTROL
R1410
C1405
R1411
R1412
IC1415
R1415
RECEIVE
IC1431
C1404
STAND BY
SWITCH
R1416
R1417
R1418
R1419
R1420
R1421
R1422
R1423
R1424
R1425
C1406
C1407
C1408
C1409
C1410
R1426
R1427
R1428
R1429
R1430
5 BIT
CONTROL
OUTPUT
KIA
KIB
KIC
KID
KIE
D1405
D1406
D1407
D1408
D1409
D1410
OFF MODE
INPUT
CASSETTE
MODE INPUT
PHONO MODE
INPUT

When the Control Unit is used as the remote control unit, the COMMAND data is inputted here.

This signal inhibits all inputs to IC1401 for 0.2 seconds after releasing the button of the Control Unit. This prevents the next inputs from entering IC1401 when IC1401 processes the inputs.

Decoder Output

When the Control Unit is attached to the set, the COMMAND data is inputted here.

When the UP or the DOWN button is pressed, the width of this signal is changed.

The pulse signal is integrated and changed to dc signal. This voltage is 0 V dc when the VOLUME is maximum, and 10 V dc when the VOLUME is minimum.

This signal lights the RECEIVE indication lamp when the COMMAND data signal is received.

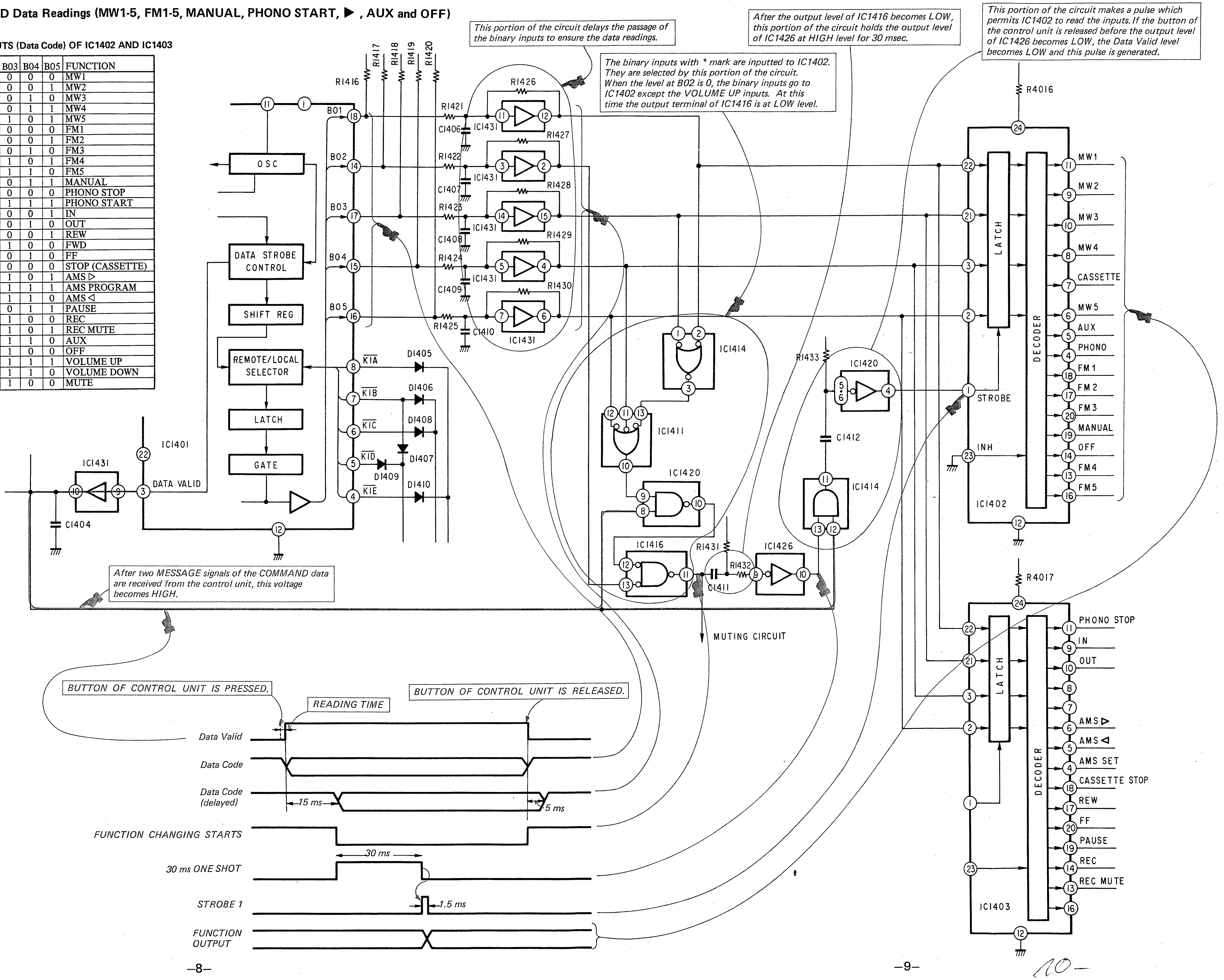
This voltage is low when the STAND BY switch is off. IC1401 inhibits the COMMAND data inputs from the Control Unit.

When the two MESSAGE signals from the Control Unit are received correctly, this voltage becomes HIGH and the set reads the COMMAND data. When the button of the Control Unit is released, this voltage becomes LOW again.

4. COMMAND Data Readings (MW1-5, FM1-5, MANUAL, PHONO START, ▶, AUX and OFF)

BINARY INPUTS (Data Code) OF IC1402 AND IC1403

	B01	B02	B03	B04	B05	FUNCTION
*	0	0	0	0	0	MW1
*	0	0	0	0	1	MW2
*	0	0	0	1	0	MW3
*	0	0	0	1	1	MW4
*	0	0	1	0	1	MW5
*	1	0	0	0	0	FM1
*	1	0	0	0	1	FM2
*	1	0	0	1	0	FM3
*	1	0	1	0	1	FM4
*	1	0	1	1	0	FM5
*	1	0	0	1	1	MANUAL
	0	1	0	0	0	PHONO STOP
*	0	0	1	1	1	PHONO START
	0	1	0	0	1	IN
	0	1	0	1	0	OUT
	1	1	0	0	1	REW
*	0	0	1	0	0	FWD
	1	1	0	1	0	FF
	1	1	0	0	0	STOP (CASSETTE)
	0	1	1	0	1	AMS ▷
	0	1	1	1	1	AMS PROGRAM
	0	1	1	1	0	AMS ◁
	1	1	0	1	1	PAUSE
	1	1	1	0	0	REC
	1	1	1	0	1	REC MUTE
*	0	0	1	1	0	AUX
*	1	0	1	0	0	OFF
	1	0	1	1	1	VOLUME UP
	1	1	1	1	0	VOLUME DOWN
	0	1	1	0	0	MUTE



This portion of the circuit delays the passage of the binary inputs to ensure the data readings.

*The binary inputs with * mark are inputted to IC1402. They are selected by this portion of the circuit. When the level at B02 is 0, the binary inputs go to IC1402 except the VOLUME UP inputs. At this time the output terminal of IC1416 is at LOW level.*

After the output level of IC1416 becomes LOW, this portion of the circuit holds the output level of IC1426 at HIGH level for 30 msec.

This portion of the circuit makes a pulse which permits IC1402 to read the inputs. If the button of the control unit is released before the output level of IC1426 becomes LOW, the Data Valid level becomes LOW and this pulse is generated.

After two MESSAGE signals of the COMMAND data are received from the control unit, this voltage becomes HIGH.

BUTTON OF CONTROL UNIT IS PRESSED.

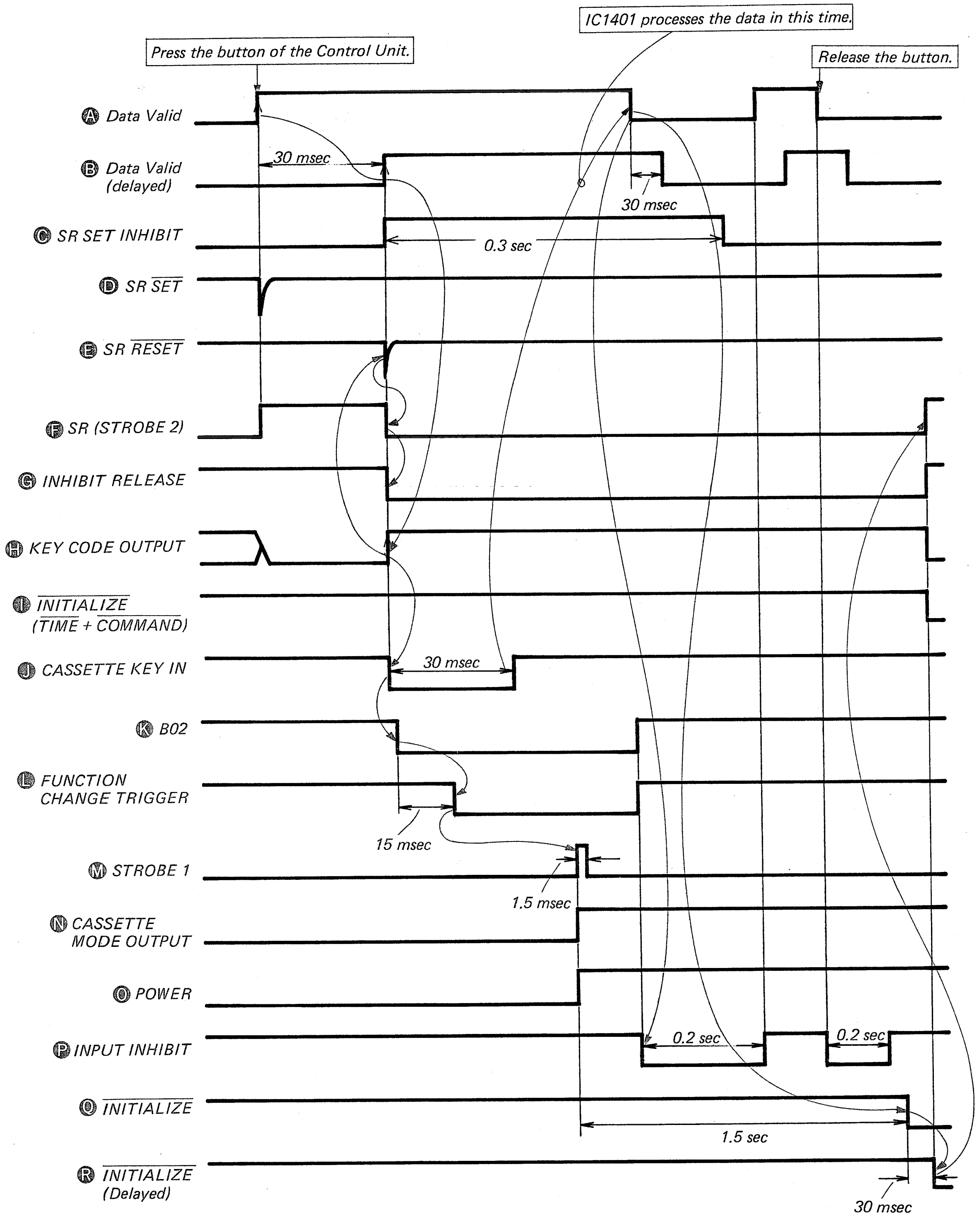
READING TIME

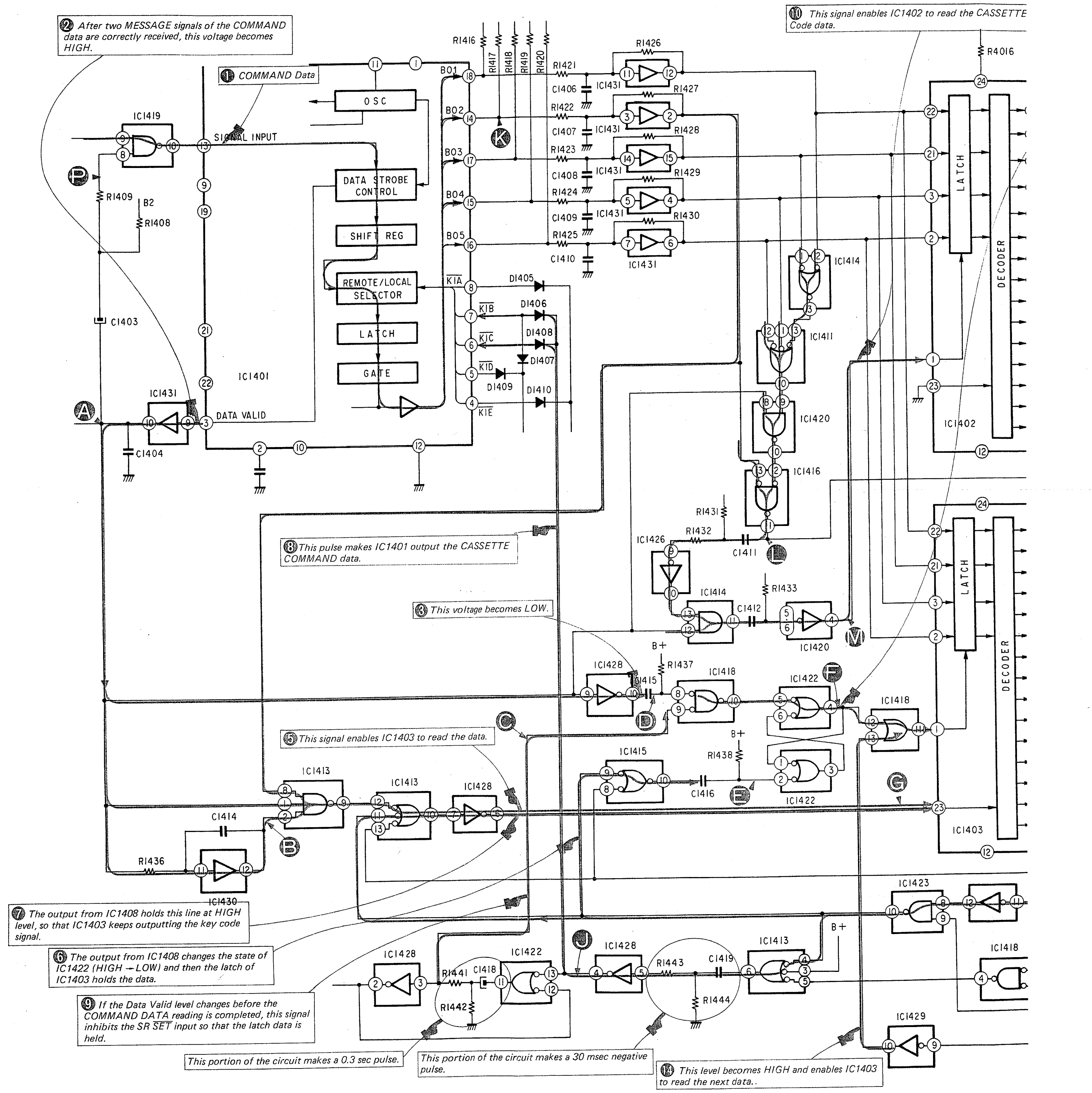
BUTTON OF CONTROL UNIT IS RELEASED.

R1416
R1417
R1418
R1419
R1420
B01
B02
B03
B04
B05
OSC
DATA STROBE CONTROL
SHIFT REG
REMOTE/LOCAL SELECTOR
LATCH
GATE
IC1401
DATA VALID
IC1431
C1404
KIA
KIB
KIC
KID
KIE
D1405
D1406
D1407
D1408
D1409
D1410
R1421
R1422
R1423
R1424
R1425
R1426
R1427
R1428
R1429
R1430
C1406
C1407
C1408
C1409
C1410
IC1431
IC1414
IC1411
IC1420
IC1416
IC1426
R1431
R1432
R1433
C1411
C1412
MUTING CIRCUIT
R4016
R4017
LATCH
DECODER
STROBE
INH
IC1402
MW1
MW2
MW3
MW4
CASSETTE
MW5
AUX
PHONO
FM1
FM2
FM3
MANUAL
OFF
FM4
FM5
IC1403
PHONO STOP
IN
OUT
AMS ▷
AMS ◁
AMS SET
CASSETTE STOP
REW
FF
PAUSE
REC
REC MUTE
Data Valid
Data Code
Data Code (delayed)
15 ms
5 ms
FUNCTION CHANGING STARTS
30 ms ONE SHOT
30 ms
STROBE 1
1.5 ms
FUNCTION OUTPUT

10–

5. COMMAND Data Readings in Power-off Mode (Fast Forward, Rewind, Pause, AMS ▷ , AMS PROGRAM, AMS ◁ and Record)




IC1419
IC1401
OSC
DATA STROBE CONTROL
SHIFT REG
REMOTE/LOCAL SELECTOR
LATCH
GATE
SIGNAL INPUT
DATA VALID
IC1431
IC1402
IC1403
LATCH
DECODER
IC1411
IC1414
IC1416
IC1420
IC1426
IC1428
IC1418
IC1422
IC1415
IC1413
IC1430
IC1423
IC1429
IC1419
B01
B02
B03
B04
B05
KIA
KIB
KIC
KID
KIE
R1416
R1417
R1418
R1419
R1420
R1408
R1409
C1403
C1404
C1414
R1436
B2
B+
Ⓐ
Ⓑ
Ⓒ
Ⓓ
Ⓔ
Ⓕ
Ⓖ
Ⓙ
Ⓚ
Ⓛ
Ⓜ
Ⓟ

➀ COMMAND Data

➁ After two MESSAGE signals of the COMMAND data are correctly received, this voltage becomes HIGH.

➂ This voltage becomes LOW.

➄ This signal enables IC1403 to read the data.

➅ The output from IC1408 changes the state of IC1422 (HIGH → LOW) and then the latch of IC1403 holds the data.

➆ The output from IC1408 holds this line at HIGH level, so that IC1403 keeps outputting the key code signal.

➇ This pulse makes IC1401 output the CASSETTE COMMAND data.

➈ If the Data Valid level changes before the COMMAND DATA reading is completed, this signal inhibits the SR $\overline{SET}$ input so that the latch data is held.

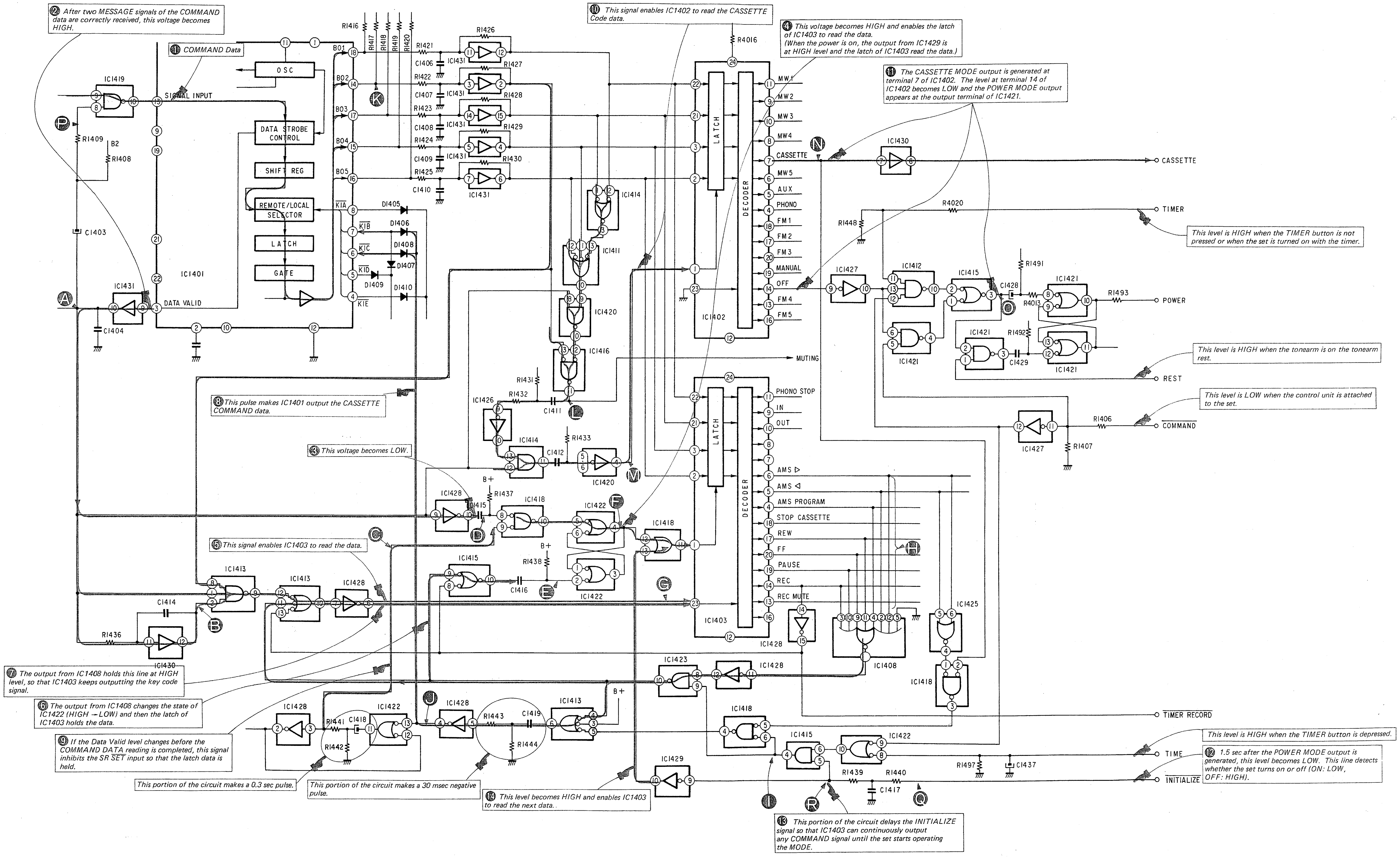
➉ This signal enables IC1402 to read the CASSETTE Code data.

This portion of the circuit makes a 0.3 sec pulse.

This portion of the circuit makes a 30 msec negative pulse.

⑭ This level becomes HIGH and enables IC1403 to read the next data.

Record)


IC1401
OSC
DATA STROBE CONTROL
SHIFT REG
REMOTE/LOCAL SELECTOR
LATCH
GATE
SIGNAL INPUT
DATA VALID
IC1402
IC1403
LATCH
DECODER
MW1
MW2
MW3
MW4
CASSETTE
MW5
AUX
PHONO
FM1
FM2
FM3
MANUAL
OFF
FM4
FM5
MUTING
PHONO STOP
IN
OUT
AMS ▷
AMS ◁
AMS PROGRAM
STOP CASSETTE
REW
FF
PAUSE
REC
REC MUTE
IC1408
CASSETTE
TIMER
POWER
REST
COMMAND
TIMER RECORD
TIME
INITIALIZE
B+

② After two MESSAGE signals of the COMMAND data are correctly received, this voltage becomes HIGH.

① COMMAND Data

⑩ This signal enables IC1402 to read the CASSETTE Code data.

④ This voltage becomes HIGH and enables the latch of IC1403 to read the data. (When the power is on, the output from IC1429 is at HIGH level and the latch of IC1403 read the data.)

⑪ The CASSETTE MODE output is generated at terminal 7 of IC1402. The level at terminal 14 of IC1402 becomes LOW and the POWER MODE output appears at the output terminal of IC1421.

This level is HIGH when the TIMER button is not pressed or when the set is turned on with the timer.

This level is HIGH when the tonearm is on the tonearm rest.

This level is LOW when the control unit is attached to the set.

⑧ This pulse makes IC1401 output the CASSETTE COMMAND data.

③ This voltage becomes LOW.

⑤ This signal enables IC1403 to read the data.

⑦ The output from IC1408 holds this line at HIGH level, so that IC1403 keeps outputting the key code signal.

⑥ The output from IC1408 changes the state of IC1422 (HIGH → LOW) and then the latch of IC1403 holds the data.

⑨ If the Data Valid level changes before the COMMAND DATA reading is completed, this signal inhibits the SR $\overline{\text{SET}}$ input so that the latch data is held.

This portion of the circuit makes a 0.3 sec pulse.

This portion of the circuit makes a 30 msec negative pulse.

⑭ This level becomes HIGH and enables IC1403 to read the next data.

This level is HIGH when the TIMER button is depressed.

⑫ 1.5 sec after the POWER MODE output is generated, this level becomes LOW. This line detects whether the set turns on or off (ON: LOW, OFF: HIGH).

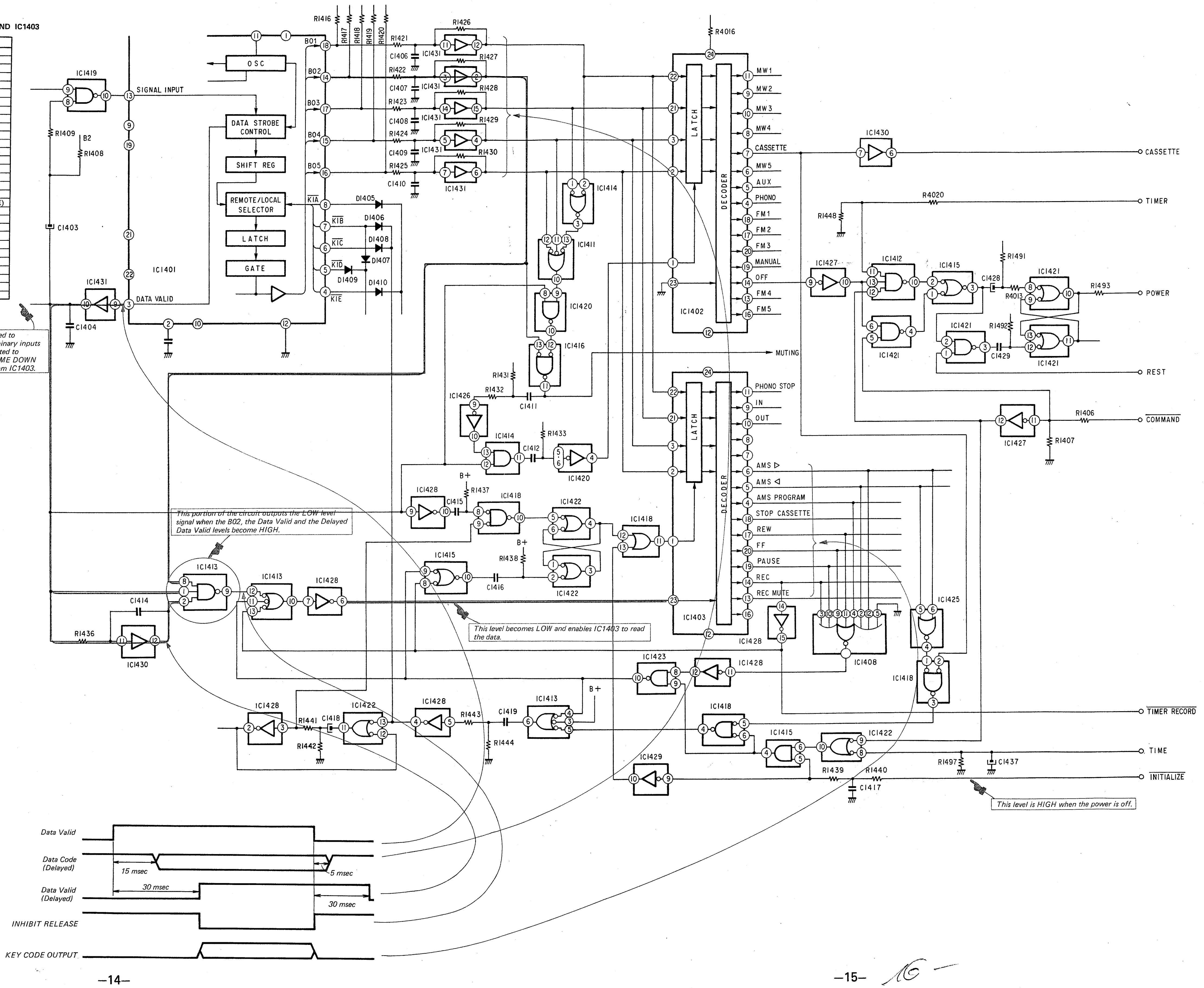
⑬ This portion of the circuit delays the INITIALIZE signal so that IC1403 can continuously output any COMMAND signal until the set starts operating the MODE.

6. COMMAND Data Readings (PHONO STOP, IN, OUT, Rewind, Fast Forward, Stop: cassette, AMS ▷ , AMS PROGRAM, AMS ◁ , Pause, Record and REC MUTE)

BINARY INPUTS (Data Code) OF IC1402 AND IC1403

	B01	B02	B03	B04	B05	FUNCTION
	0	0	0	0	0	MW1
	0	0	0	0	1	MW2
	0	0	0	1	0	MW3
	0	0	0	1	1	MW4
	0	0	1	0	1	MW5
	1	0	0	0	0	FM1
	1	0	0	0	1	FM2
	1	0	0	1	0	FM3
	1	0	1	0	1	FM4
	1	0	1	1	0	FM5
	1	0	0	1	1	MANUAL
*	0	1	0	0	0	PHONO STOP
	0	0	1	1	1	PHONO START
*	0	1	0	0	1	IN
*	0	1	0	1	0	OUT
*	1	1	0	0	1	REW
	0	0	1	0	0	FWD
*	1	1	0	1	0	FF
*	1	1	0	0	0	STOP (CASSETTE)
*	0	1	1	0	1	AMS▷
*	0	1	1	1	1	AMS PROGRAM
*	0	1	1	1	0	AMS◁
*	1	1	0	1	1	PAUSE
*	1	1	1	0	0	REC
*	1	1	1	0	1	REC MUTE
	0	0	1	1	0	AUX
	1	0	1	0	0	OFF
	1	0	1	1	1	VOLUME UP
*	1	1	1	1	0	VOLUME DOWN
*	0	1	1	0	0	MUTE

*The binary inputs with * mark are inputted to IC1403. When the level at B02 is 1, the binary inputs go to IC1403. But no circuits are connected to terminals 7 and 16 of IC1403, the VOLUME DOWN and the MUTE data are not outputted from IC1403.*

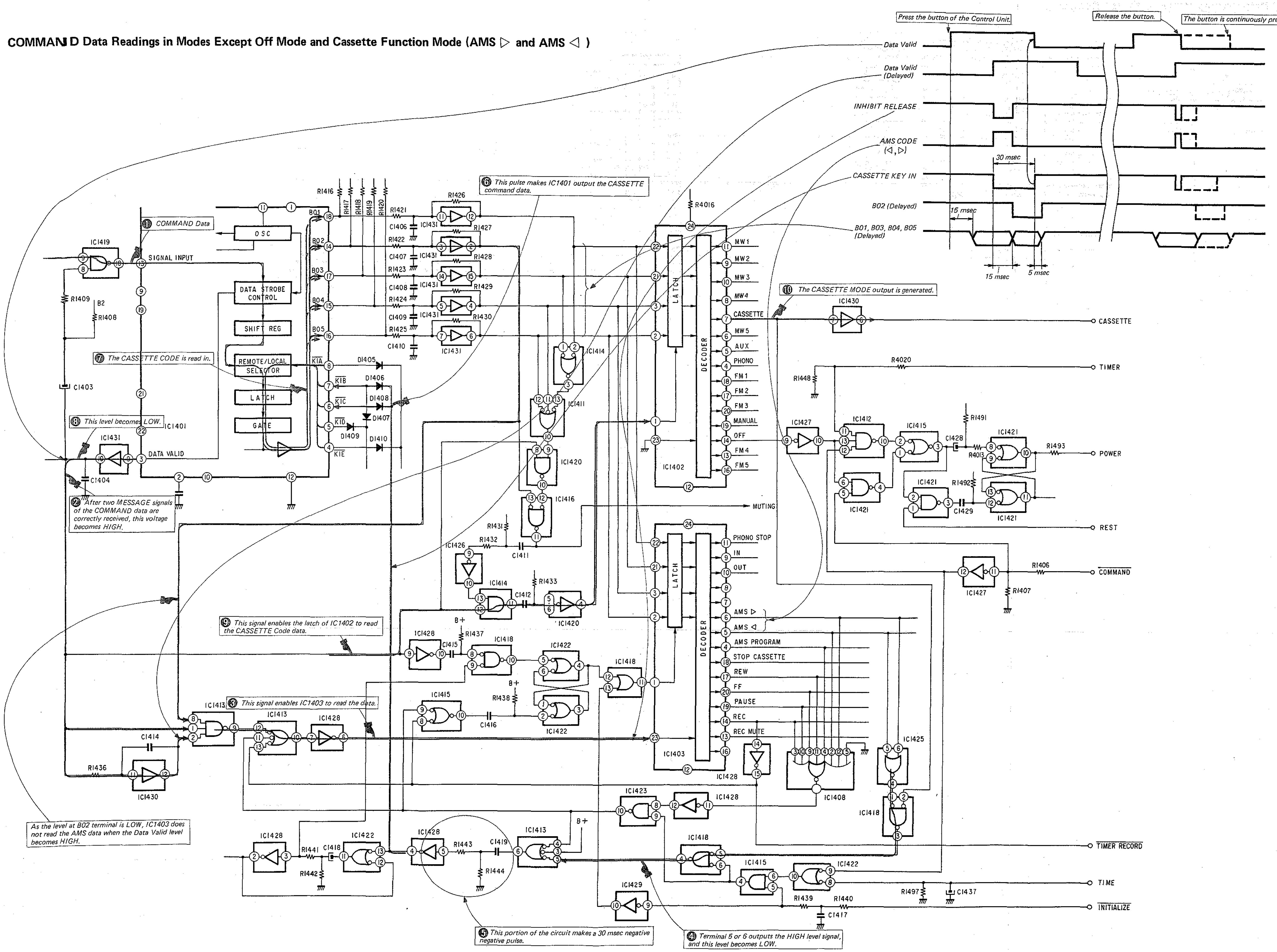

IC1419
SIGNAL INPUT
R1409
B2
R1408
C1403
IC1431
DATA VALID
C1404
OSC
DATA STROBE CONTROL
SHIFT REG
REMOTE/LOCAL SELECTOR
LATCH
GATE
IC1401
B01
B02
B03
B04
B05
KIA
KIB
KIC
KID
KIE
D1405
D1406
D1407
D1408
D1409
D1410
R1416
R1417
R1418
R1419
R1420
R1421
R1422
R1423
R1424
R1425
R1426
R1427
R1428
R1429
R1430
C1406
C1407
C1408
C1409
C1410
IC1414
IC1411
IC1420
IC1416
MUTING
R1431
R1432
C1411
IC1426
R1433
C1412
R4016
LATCH
DECODER
IC1402
MW1
MW2
MW3
MW4
CASSETTE
MW5
AUX
PHONO
FM1
FM2
FM3
MANUAL
OFF
FM4
FM5
IC1403
PHONO STOP
IN
OUT
AMS ▷
AMS ◁
AMS PROGRAM
STOP CASSETTE
REW
FF
PAUSE
REC
REC MUTE
IC1430
R4020
TIMER
R1448
IC1427
IC1412
IC1415
R1491
C1428
IC1421
R1493
R4013
POWER
R1492
C1429
REST
R1406
COMMAND
R1407
IC1428
R1437
C1415
IC1418
IC1422
B+
R1438
C1416
IC1413
C1414
R1436
IC1423
IC1408
IC1425
TIMER RECORD
R1441
C1418
R1442
R1443
C1419
R1444
IC1429
R1439
R1440
C1417
R1497
C1437
TIME
INITIALIZE
Data Valid
Data Code (Delayed)
15 msec
5 msec
Data Valid (Delayed)
30 msec
30 msec
INHIBIT RELEASE
KEY CODE OUTPUT

This portion of the circuit outputs the LOW level signal when the B02, the Data Valid and the Delayed Data Valid levels become HIGH.

This level becomes LOW and enables IC1403 to read the data.

This level is HIGH when the power is off.

7. COMMAND Data Readings in Modes Except Off Mode and Cassette Function Mode (AMS ▷ and AMS ◁)


Data Valid
Data Valid (Delayed)
INHIBIT RELEASE
AMS CODE (◁, ▷)
CASSETTE KEY IN
B02 (Delayed)
B01, B03, B04, B05 (Delayed)
30 msec
15 msec
15 msec
5 msec
IC1419
R1409
B2
R1408
C1403
IC1401
IC1431
C1404
SIGNAL INPUT
DATA VALID
OSC
DATA STROBE CONTROL
SHIFT REG
REMOTE/LOCAL SELECTOR
LATCH
GATE
B01
B02
B03
B04
B05
KIA
KIB
KIC
KID
KIE
D1405
D1406
D1407
D1408
D1409
D1410
R1416
R1417
R1418
R1419
R1420
R1421
R1422
R1423
R1424
R1425
R1426
R1427
R1428
R1429
R1430
C1406
C1407
C1408
C1409
C1410
IC1431
IC1414
IC1411
IC1420
IC1416
IC1426
R1431
R1432
C1411
R1433
C1412
R4016
IC1402
IC1403
LATCH
DECODER
MW1
MW2
MW3
MW4
CASSETTE
MW5
AUX
PHONO
FM1
FM2
FM3
MANUAL
OFF
FM4
FM5
MUTING
PHONO STOP
IN
OUT
AMS ▷
AMS ◁
AMS PROGRAM
STOP CASSETTE
REW
FF
PAUSE
REC
REC MUTE
IC1430
R4020
R1448
IC1427
IC1412
IC1415
R1491
C1428
R4013
IC1421
R1493
R1492
C1429
R1406
R1407
CASSETTE
TIMER
POWER
REST
COMMAND
TIMER RECORD
TIME
INITIALIZE
IC1428
C1415
R1437
B+
IC1418
IC1422
R1438
C1416
IC1413
C1414
R1436
IC1423
IC1425
IC1408
R1441
C1418
R1442
R1443
C1419
R1444
IC1429
R1439
R1440
C1417
R1497
C1437

Press the button of the Control Unit.

Release the button.

The button is continuously pressed.

① COMMAND Data

② After two MESSAGE signals of the COMMAND data are correctly received, this voltage becomes HIGH.

③ This signal enables IC1403 to read the data.

④ Terminal 5 or 6 outputs the HIGH level signal, and this level becomes LOW.

⑤ This portion of the circuit makes a 30 msec negative negative pulse.

⑥ This pulse makes IC1401 output the CASSETTE command data.

⑦ The CASSETTE CODE is read in.

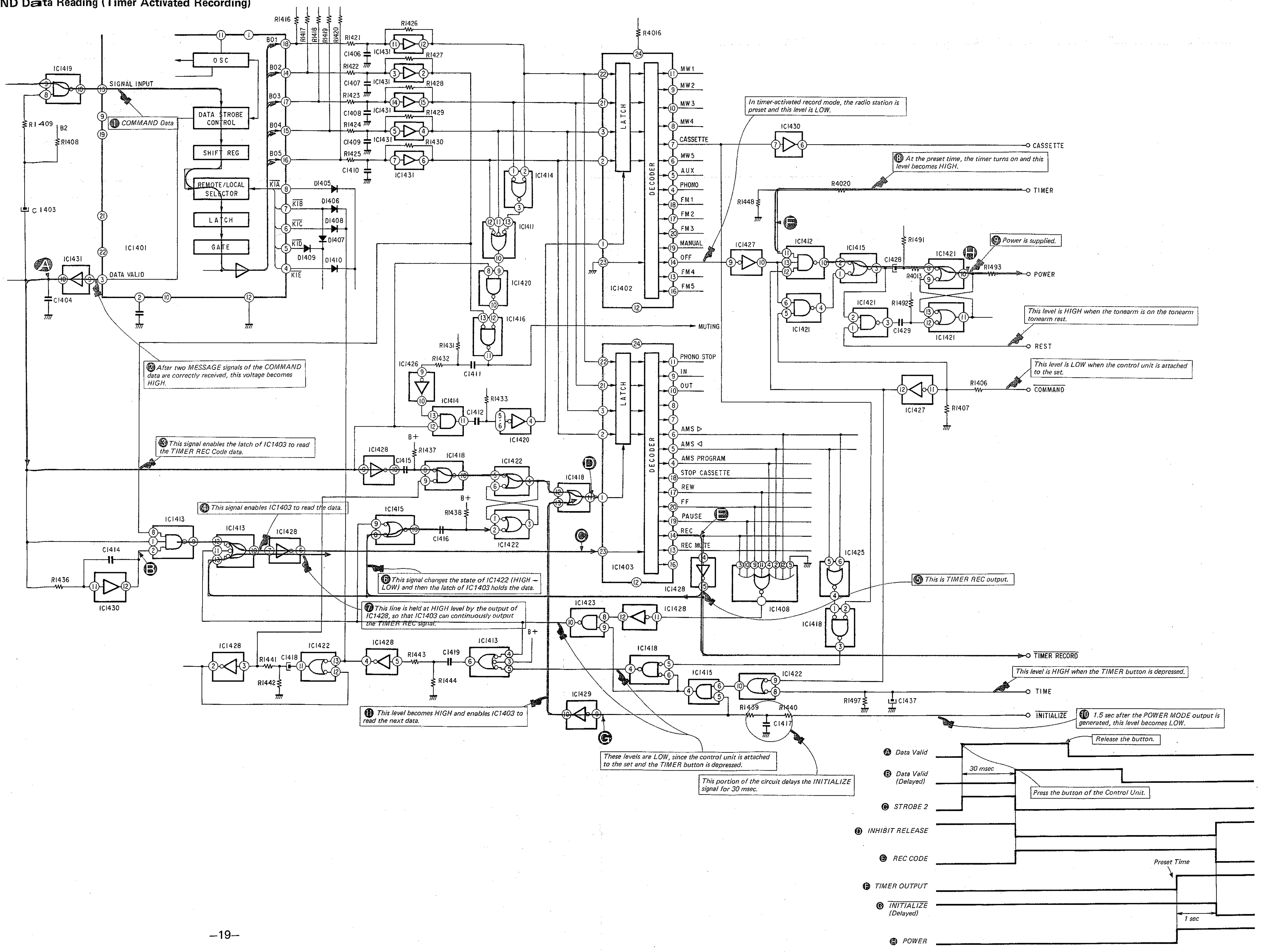
⑧ This level becomes LOW.

⑨ This signal enables the latch of IC1402 to read the CASSETTE Code data.

⑩ The CASSETTE MODE output is generated.

As the level at B02 terminal is LOW, IC1403 does not read the AMS data when the Data Valid level becomes HIGH.

8. COMMAND Data Reading (Timer Activated Recording)


IC1419
SIGNAL INPUT
OSC
DATA STROBE CONTROL
SHIFT REG
REMOTE/LOCAL SELECTOR
LATCH
GATE
IC1401
DATA VALID
IC1431
C1403
C1404
R1409
B2
R1408
B01
B02
B03
B04
B05
KIA
KIB
KIC
KID
KIE
D1405
D1406
D1407
D1408
D1409
D1410
R1416
R1417
R1418
R1419
R1420
R1421
R1422
R1423
R1424
R1425
R1426
R1427
R1428
R1429
R1430
C1406
C1407
C1408
C1409
C1410
IC1414
IC1411
IC1420
IC1416
R1431
R1432
C1411
IC1426
R1433
C1412
R1437
C1415
B+
R1438
C1416
IC1418
IC1422
IC1415
IC1428
IC1413
C1414
R1436
IC1430
R1441
C1418
R1442
R1443
C1419
R1444
IC1423
IC1429
R4016
LATCH
DECODER
IC1402
MW1
MW2
MW3
MW4
CASSETTE
MW5
AUX
PHONO
FM1
FM2
FM3
MANUAL
OFF
FM4
FM5
MUTING
IC1403
PHONO STOP
IN
OUT
AMS ▷
AMS ◁
AMS PROGRAM
STOP CASSETTE
REW
FF
PAUSE
REC
REC MUTE
IC1408
IC1425
IC1427
IC1412
IC1421
C1428
R1491
R4013
R1493
R1492
C1429
R4020
R1448
R1406
R1407
R1497
C1437
R1439
R1440
C1417
CASSETTE
TIMER
POWER
REST
COMMAND
TIMER RECORD
TIME
INITIALIZE
Ⓐ
Ⓑ
Ⓒ
Ⓓ
Ⓔ
Ⓕ
Ⓖ
Ⓗ
Ⓐ Data Valid
Ⓑ Data Valid (Delayed)
Ⓒ STROBE 2
Ⓓ INHIBIT RELEASE
Ⓔ REC CODE
Ⓕ TIMER OUTPUT
Ⓖ INITIALIZE (Delayed)
Ⓗ POWER
30 msec
Preset Time
1 sec

❶ COMMAND Data

❷ After two MESSAGE signals of the COMMAND data are correctly received, this voltage becomes HIGH.

❸ This signal enables the latch of IC1403 to read the TIMER REC Code data.

❹ This signal enables IC1403 to read the data.

❺ This is TIMER REC output.

❻ This signal changes the state of IC1422 (HIGH – LOW) and then the latch of IC1403 holds the data.

❼ This line is held at HIGH level by the output of IC1428, so that IC1403 can continuously output the TIMER REC signal.

❽ At the preset time, the timer turns on and this level becomes HIGH.

❾ Power is supplied.

❿ 1.5 sec after the POWER MODE output is generated, this level becomes LOW.

⓫ This level becomes HIGH and enables IC1403 to read the next data.

In timer-activated record mode, the radio station is preset and this level is LOW.

This level is HIGH when the tonearm is on the tonearm rest.

This level is LOW when the control unit is attached to the set.

This level is HIGH when the TIMER button is depressed.

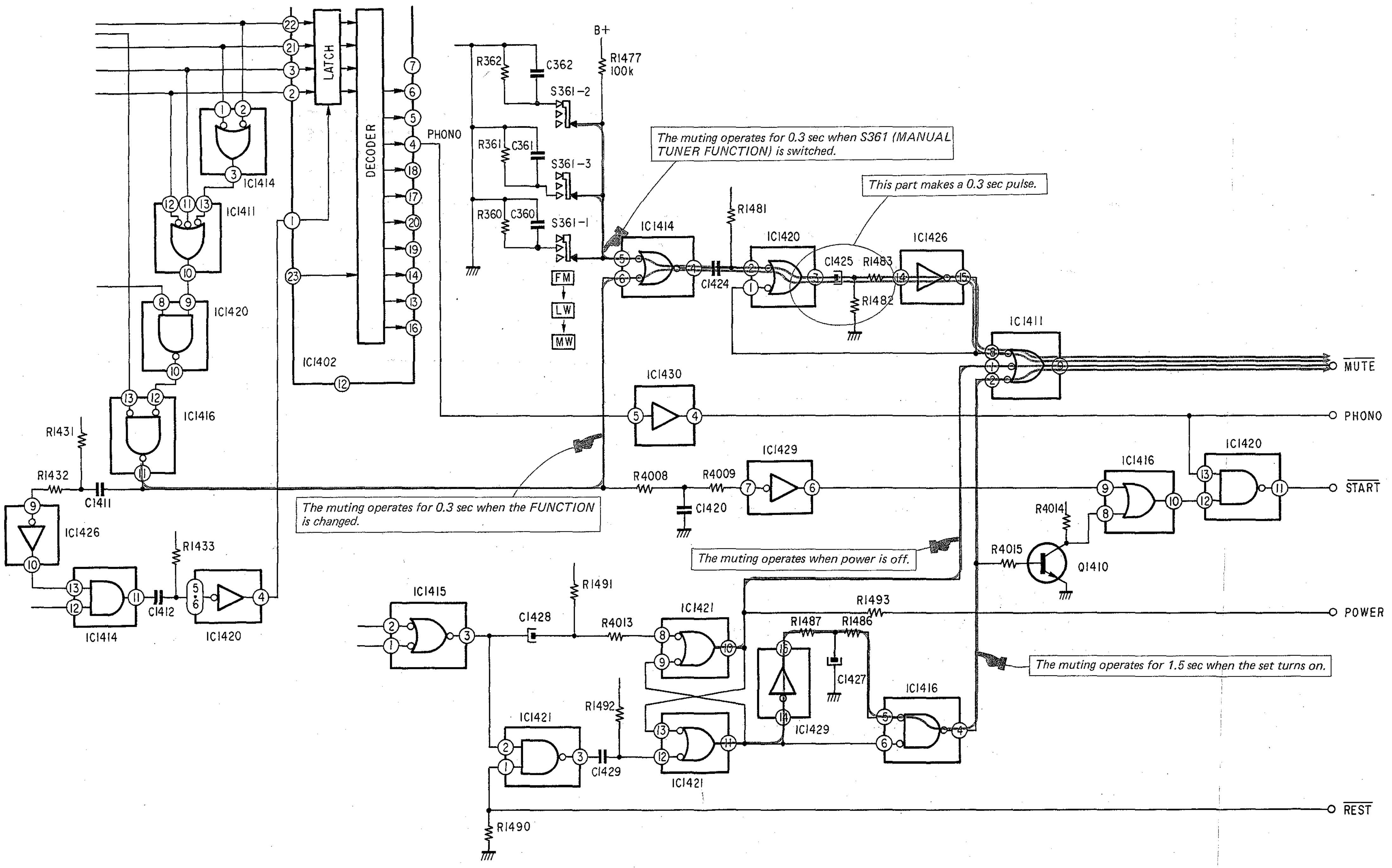
These levels are LOW, since the control unit is attached to the set and the TIMER button is depressed.

This portion of the circuit delays the INITIALIZE signal for 30 msec.

Release the button.

Press the button of the Control Unit.

9. Muting


LATCH
DECODER
IC1402
PHONO
IC1414
IC1411
IC1420
IC1416
IC1426
R1431
R1432
C1411
R1433
C1412
R362
C362
R361
C361
R360
C360
S361-2
S361-3
S361-1
FM
LW
MW
B+
R1477
100k
IC1414
C1424
R1481
IC1420
C1425
R1483
R1482
IC1426
IC1411
MUTE
IC1430
PHONO
R4008
R4009
C1420
IC1429
IC1416
R4014
R4015
Q1410
IC1420
START
IC1415
C1428
R1491
R4013
IC1421
R1493
R1487
R1486
C1427
IC1429
IC1416
POWER
R1492
IC1421
C1429
IC1421
R1490
REST

The muting operates for 0.3 sec when S361 (MANUAL TUNER FUNCTION) is switched.

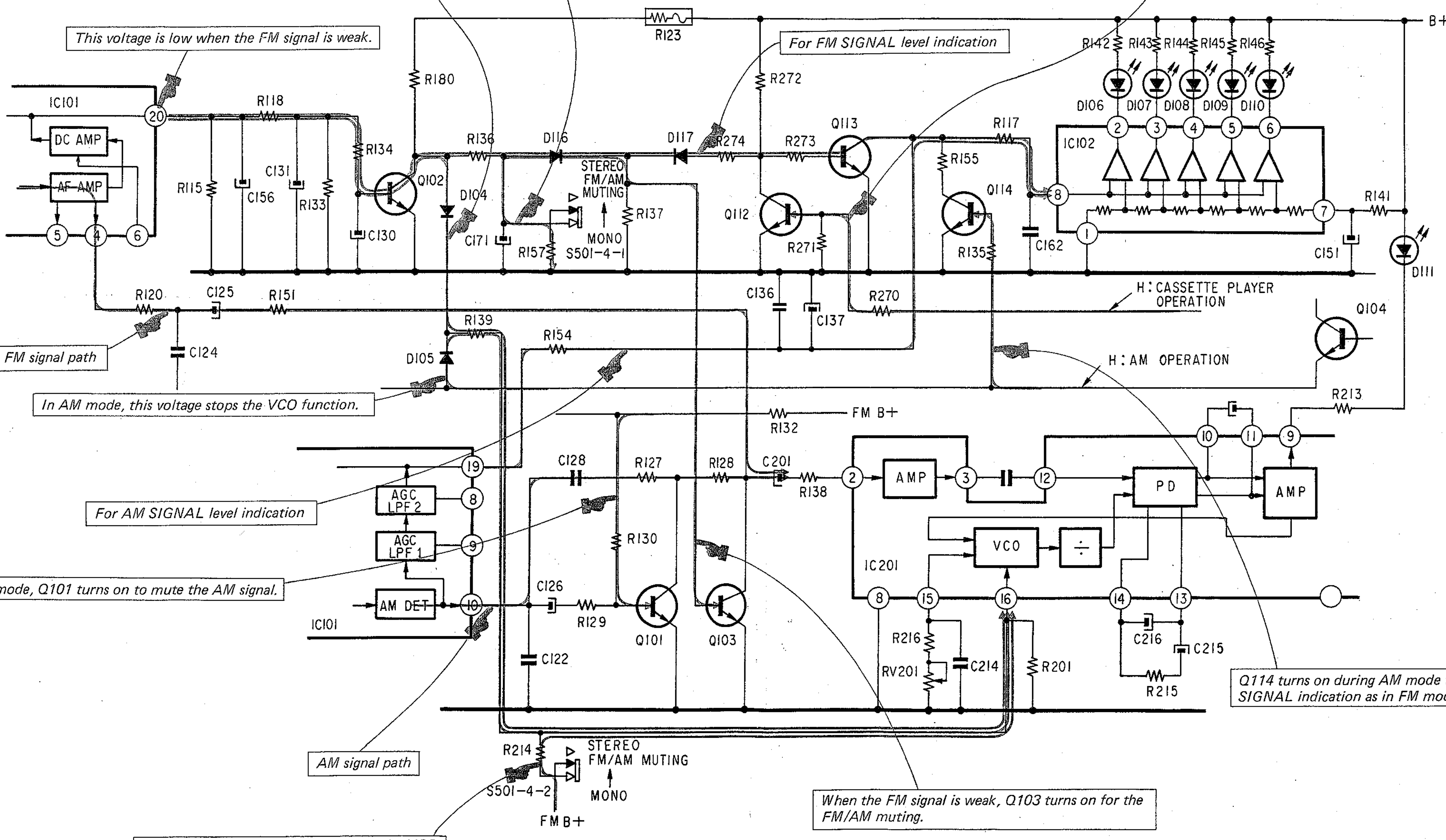
This part makes a 0.3 sec pulse.

The muting operates for 0.3 sec when the FUNCTION is changed.

The muting operates when power is off.

The muting operates for 1.5 sec when the set turns on.

10. Stereo/Mono Selection Circuit


IC101
DC AMP
AF AMP
R118
R134
R115
C156
C131
R133
C130
R180
Q102
R136
D104
D116
STEREO
FM/AM
MUTING
MONO
S501-4-1
R137
R157
C171
D117
R274
R273
R123
R272
Q113
Q112
R271
C136
C137
R270
R117
R155
Q114
R135
C162
IC102
R142
R143
R144
R145
R146
D106
D107
D108
D109
D110
R141
C151
D111
B+
H: CASSETTE PLAYER OPERATION
Q104
H: AM OPERATION
R213
R120
C125
R151
C124
R139
D105
R154
R132
FM B+
AGC LPF 2
AGC LPF 1
AM DET
C128
R127
R128
C201
R138
R130
C126
R129
C122
Q101
Q103
IC201
AMP
VCO
÷
PD
R216
RV201
C214
R201
C216
C215
R215
R214
STEREO
FM/AM MUTING
MONO
S501-4-2
FM B+

When the FM signal is weak, this voltage stops the VCO function.

The FM/AM muting does not operate in FM mono mode.

Q112 turns on during CASSETTE operation so that the SIGNAL indication will not light.

This voltage is low when the FM signal is weak.

For FM SIGNAL level indication

FM signal path

In AM mode, this voltage stops the VCO function.

For AM SIGNAL level indication

In FM mode, Q101 turns on to mute the AM signal.

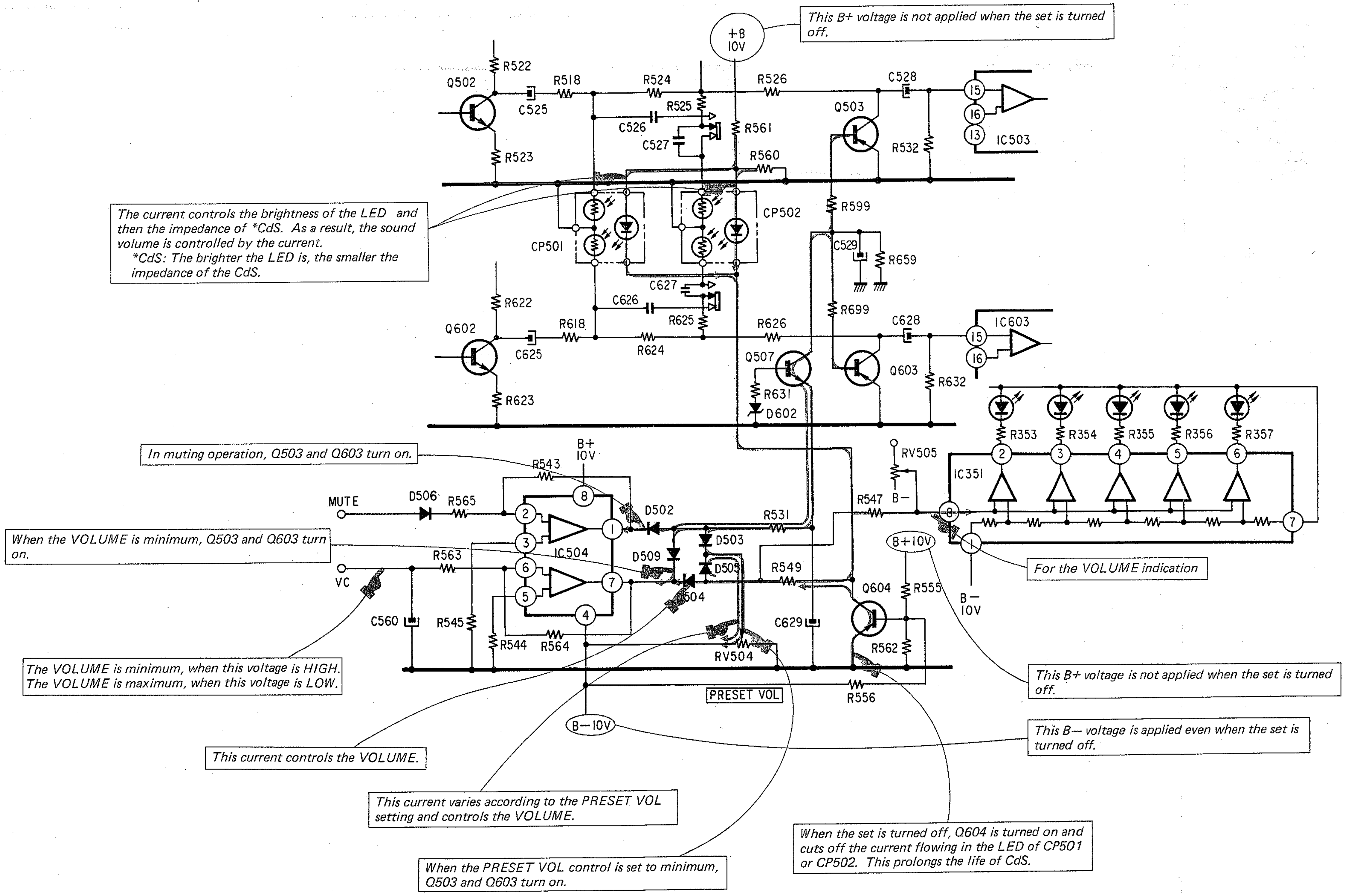
Q114 turns on during AM mode to obtain the same SIGNAL indication as in FM mode.

AM signal path

When the FM signal is weak, Q103 turns on for the FM/AM muting.

In FM mono mode, this voltage stops the VCO function.

11. Volume Control Circuit


+B
10V
R522
Q502
R518
C525
R524
R525
R526
C528
C526
C527
R561
R560
Q503
R532
R523
IC503
15
16
13
CP501
CP502
R599
C529
R659
C627
C626
R625
R622
R618
R624
Q602
C625
R626
R699
C628
IC603
Q507
Q603
R632
R631
D602
R623
R353
R354
R355
R356
R357
RV505
IC351
B+
10V
R543
MUTE
D506
R565
D502
R531
R547
B−
D503
D509
D505
IC504
R563
R549
Q604
R555
B+10V
B−
10V
VC
C560
R545
R544
R564
RV504
C629
R562
PRESET VOL
R556
B−10V

This B+ voltage is not applied when the set is turned off.

The current controls the brightness of the LED and then the impedance of *CdS. As a result, the sound volume is controlled by the current.
*CdS: The brighter the LED is, the smaller the impedance of the CdS.

In muting operation, Q503 and Q603 turn on.

When the VOLUME is minimum, Q503 and Q603 turn on.

For the VOLUME indication

The VOLUME is minimum, when this voltage is HIGH.
The VOLUME is maximum, when this voltage is LOW.

This B+ voltage is not applied when the set is turned off.

This B− voltage is applied even when the set is turned off.

This current controls the VOLUME.

This current varies according to the PRESET VOL setting and controls the VOLUME.

When the set is turned off, Q604 is turned on and cuts off the current flowing in the LED of CP501 or CP502. This prolongs the life of CdS.

When the PRESET VOL control is set to minimum, Q503 and Q603 turn on.

RECORD PLAYER SECTION

Note on Polarities of the Horizontal Drive Components

Confirm that the polarities of the two magnets are as shown in Fig. 1-1 when mounting the arm drive and the sensor coils.

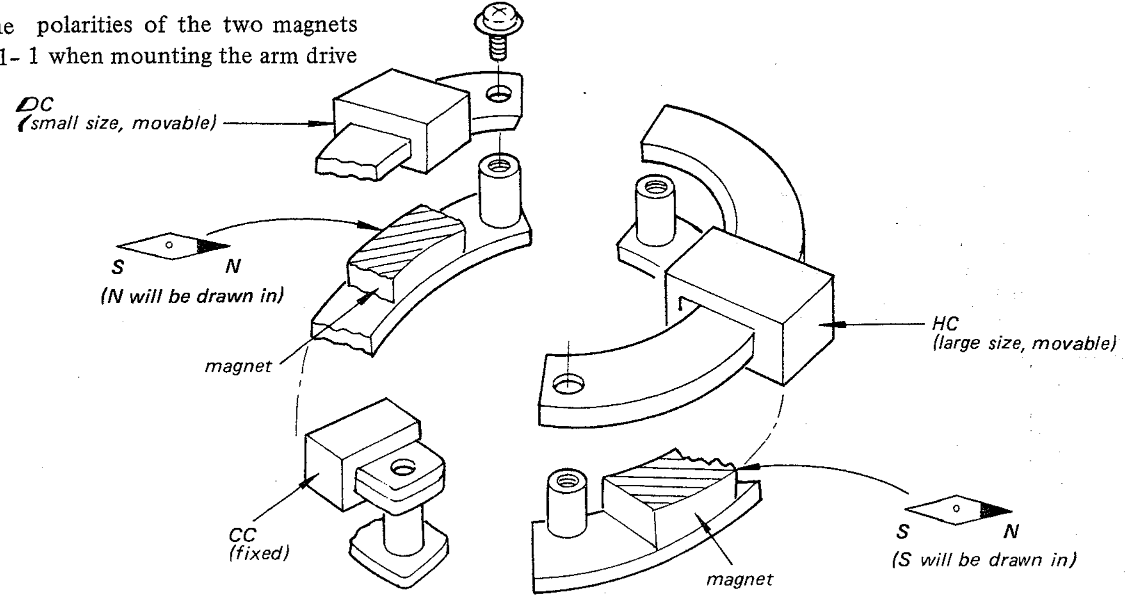
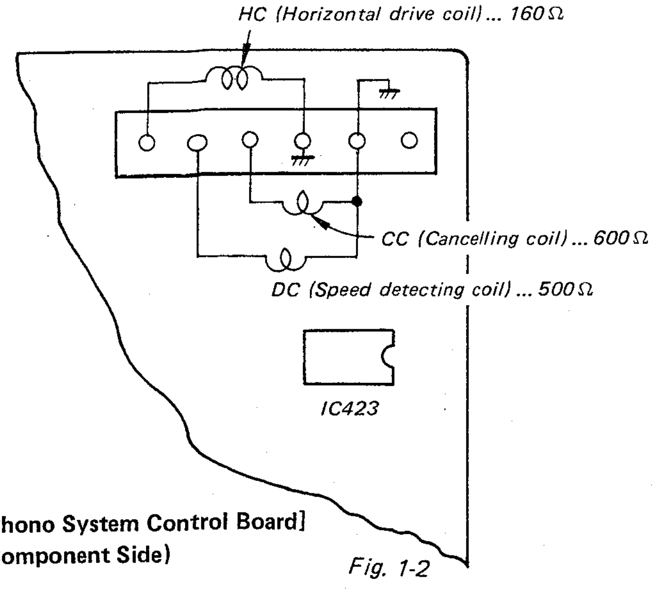

DC
(small size, movable)
S N
(N will be drawn in)
magnet
CC
(fixed)
HC
(large size, movable)
magnet
S N
(S will be drawn in)

Fig. 1-1

The terminal connections on the phono system control board are as shown in Fig. 1-2. The colors of the wires are indicated in the mounting diagram.


HC (Horizontal drive coil)... 160Ω
CC (Cancelling coil)... 600Ω
DC (Speed detecting coil)... 500Ω
IC423

[Phono System Control Board]
(Component Side)

Fig. 1-2

– Testing Method –

Check the following under power OFF condition.

+1V DC applied to HC.....Arm moves inwards.
+1V DC applied to DC.....Arm moves inwards.
+1V DC applied to CC.....Arm does not move.

1. Introduction

- **The Symbols Used in the System Control Section**

1. D-Flip Flop (abbreviated hereafter as FF)

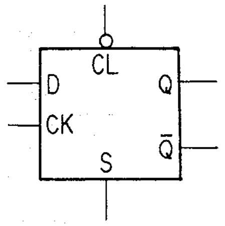


Fig. 2-1

- The CL (R) (clear or reset) and the S (set) input in a D type FF get the priority over the D (data) and the CK (clock) inputs. That is, the D and CK inputs will be ignored if the CL (R) or the S input is present.
- The input symbol represents that the input is active HIGH if there is no circle at the input at the gate and if a circle is present, then that input will be active LOW. For example, the FF in Fig. 2-1 is cleared when the CL (clear) input drops LOW.
- Fig. 2-2 shows the timing chart of the operations of a D type FF shown in Fig. 2-1.

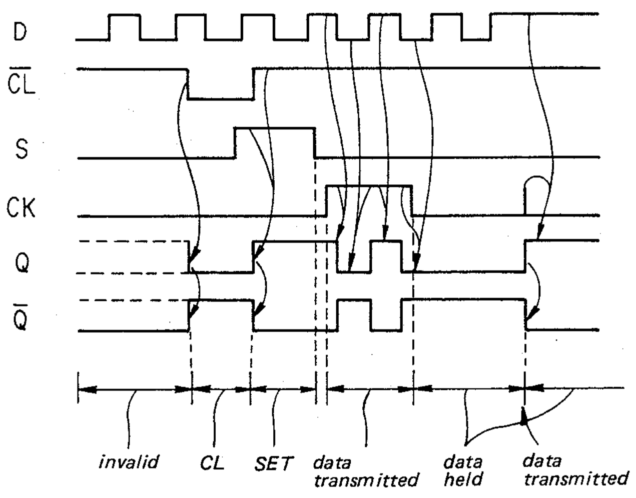

D
C̄L̄
S
CK
Q
Q̄
invalid
CL
SET
data transmitted
data held
data transmitted

Fig. 2-2

2. Inverter
The circle at the input or the output indicates the purpose of using the inverter; that is, the gate in Fig. 2-3 is an inverter for giving output "0" while the gate in Fig. 2-4 is used for giving output "1".

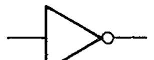


Fig. 2-3

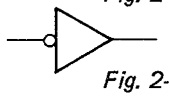


Fig. 2-4

3. AND Gate
The output of this circuit will be "1" when both inputs are "0" and will be "0" when any one of the inputs is "1".

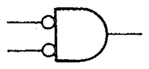


Fig. 2-5

4. NOR Gate
This gate has the function of OR + NOT.
The output is "0" when either one of the inputs is "1". Although a different symbol is used in Fig. 2-5 and Fig. 2-6, it is because the purpose is not the same and the same IC is used in both cases.

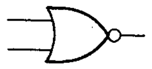


Fig. 2-6

5. NAND Gate
This gate has the function of AND + NOT.

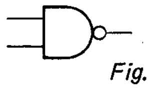


Fig. 2-7

6. OR Gate
This is an OR gate for getting a "0" output, that is, the output will be "1" if either one of the inputs is "0". The same IC as for the NAND gate is used here but a different symbol is used because of the different purpose.

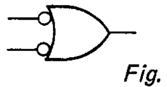


Fig. 2-8

Although the symbols above appear to be very confusing because they represent the same IC using different symbols, they are extremely useful in tracing the circuit in smaller units.

- **Combined Operation**

Although a variety of functions can be realized by combining the IC's, the following major combinations are used in the system control section.

1. Fig. 2-9 shows a controllable oscillator.
   IC421 is an MOS type of oscillator circuit in which the first stage gate operates as an analog amplifier due to the negative feedback by R and oscillates due to the positive feedback provided by C.

   The frequency can be controlled by the value of RC because the feedback is given in either the "0" or the "1" mode.

Note: Low frequency (or low duty cycle) oscillations can be obtained easily by using MOS ICs.
IC418 is a gate for controlling the oscillator output. Because of the circles at the inputs, the oscillator output will be transmitted when the gating input is "0".

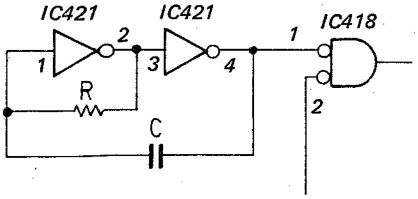


Fig. 2-9

2. Fig. 2-10 shows a Set-reset type of FF basically constituted by IC410(b) and IC414 (both set and reset are zero priority inputs) with the gate IC410(a) added for determining the priority of the inputs.
   The circuit in this example is a reset priority type of RS FF because the S input will be ineffective when $\bar{R}$ is 1 (that is R = 0).

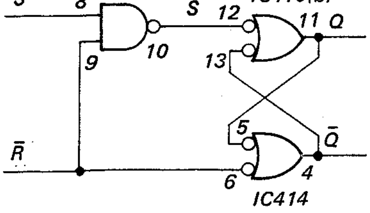


Fig. 2-10

3. The circuits of Figs. 2-11 and 2-12 are not oscillators but are integrators using the very high input impedance of MOS ICs. The purpose of using these circuits is to obtain some delay which is achieved by C and R.
   A square wave input applied to these circuits results in a triangular wave output. However, because of the diode (D), the resistor R′ will only be included in either the charging or the discharging path of the capacitor and hence the output will be a triangular wave only during the positive or the negative portion of the input wave, depending on the polarity of the diode. The waveforms of these circuits will be as shown in Fig. 2-13 if we assume R ≫ R′.

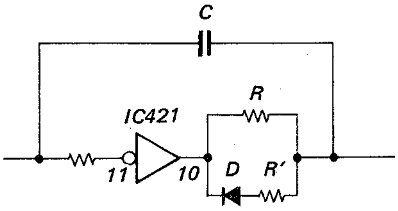


Fig. 2-11

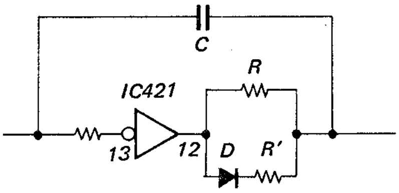


Fig. 2-12

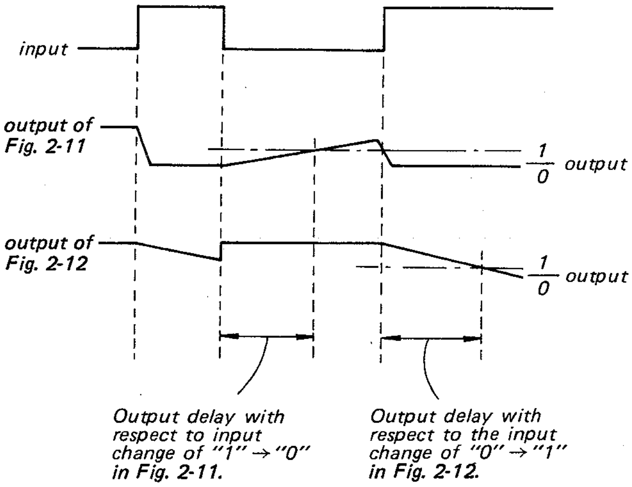


Fig. 2-13

4. The connection of Fig. 2-14 is used for eliminating any narrow pulses superimposed on the input or for obtaining short delays of the rising and falling edges, etc. This circuit is very useful in preventing the oscillation of the entire system (racing), or for preventing chattering of the inputs, etc.

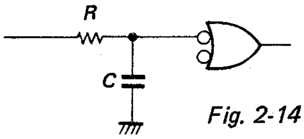


Fig. 2-14

5. The circuit in Fig. 2-15 operates only when the input mode changes from "0" or "1". The gate is operated by the falling edge "1"→"0" in the combination RC, and by the rising edge "0"→"1" in the condition R'C'.

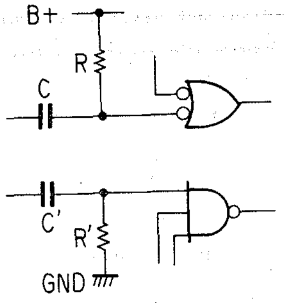


Fig. 2-15

2. Record Size Detection

This function is used for:

- detecting whether a record is placed on turntable or not.
- detecting the record size (30, 25, 17 cm).

A disk light (DL) illuminates the face of the turntable. This light passes through the turntable prism and reaches the sensors Q2201–2203 of the size sens board.

The outputs of Q2201–2203 will be as follows.

Output / Record	Q2203	Q2202	Q2201
30 cm	1	1	1
25 cm	0	1	1
17 cm	0	0	1
No record	0	0	0

These signals determine the turntable speed.

The sensor output is amplified in the size sens board by the operational amplifiers IC201, 202 which supply a positive pulse output when the signal pulse at the ⊖ terminal drops lower than the bias applied to the ⊕ terminal.

The bias applied to the ⊕ terminal will be different for different disk sizes as follows.

For a 30 cm disk (terminal 5 of IC2201) –
bias voltage: -7 V

For a 25 cm disk (terminal 3 of IC2201) –
bias voltage: -5.8 V

For a 17 cm disk (terminal 5 of IC2202) –
bias voltage: -4 V

These bias voltages are different because the amount of light reaching the sensor from the disk lamp (DL) differs in each case.

The record size detecting signal is supplied to the D type FF IC401 via IC405 in the phono system control board. This FF is used for ignoring the input for about 2 seconds until the turntable starts rotating.

3. Tonearm Position Detector

The tonearm position is detected by the tonearm position sensor. This detects the position of the tonearm by means of three rows of slits which are provided on a shutter attached below the tonearm. The following sensor outputs are obtained, in which "0" denotes that the light was received from two slits and in which "1" denotes that no light was received.

Tonearm position \ Sensor output	Sensor A	Sensor B	Sensor C
Arm at rest	1	0	0
Between the rest and the record edge (30 cm)	0	0	0
30 cm	0	0	1
25 cm	0	1	1
17 cm	0	1	0
Beginning of END	1	1	0
END complete	1	1	1

The outputs of the arm position sensor are supplied to IC405, 406 via Q406–408 and the Rest, Beginning of END, and END complete signals are generated in these ICs.

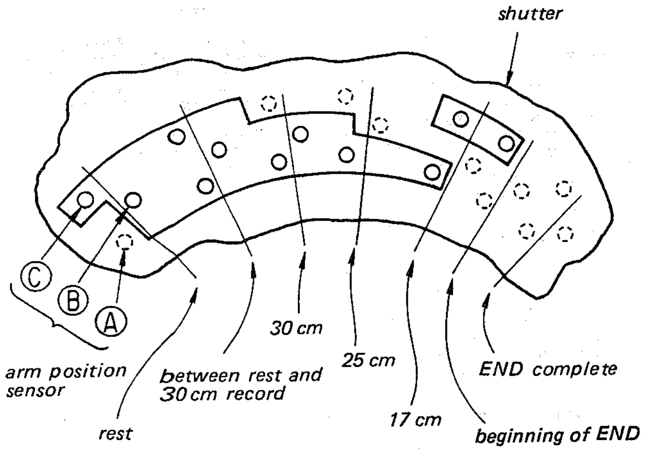

shutter
Ⓒ
Ⓑ
Ⓐ
arm position sensor
30 cm
between rest and 30 cm record
25 cm
END complete
17 cm
rest
beginning of END

Fig. 2-16 *Actually the shutter moves with respect to the sensor but the figure shown here indicates the position by changing the position of the arm position sensor.*

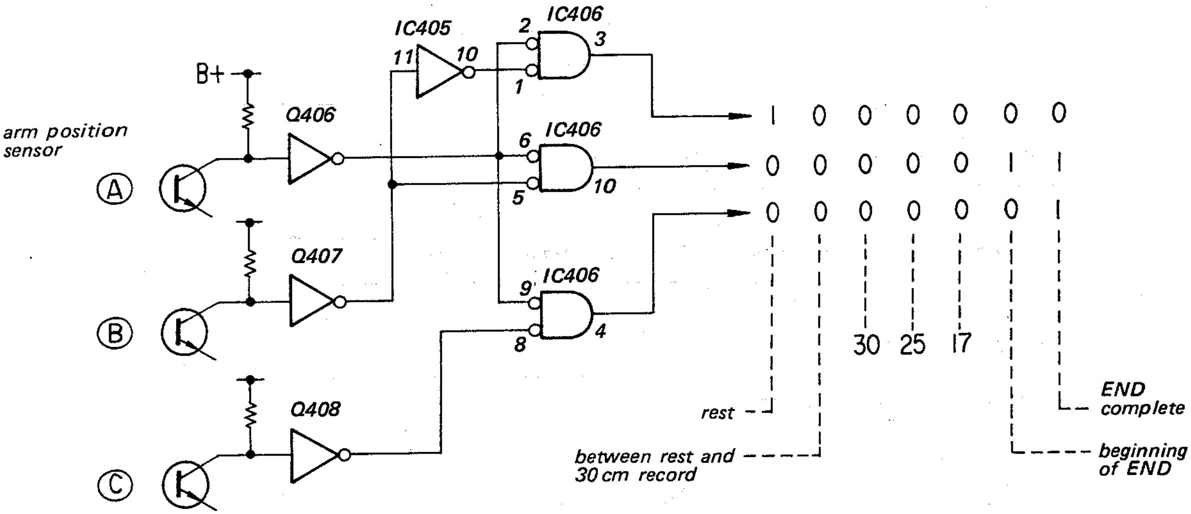

IC405
11
10
IC406
2
3
1
B+
Q406
arm position sensor
Ⓐ
6
IC406
5
10
Q407
Ⓑ
9
IC406
8
4
Q408
Ⓒ
1 0 0 0 0 0 0
0 0 0 0 0 1 1
0 0 0 0 0 0 1
30 25 17
rest
between rest and 30 cm record
END complete
beginning of END

Fig. 2-17

The outputs of the tonearm position sensor and the record size detector are combined together to generate the drop point output.

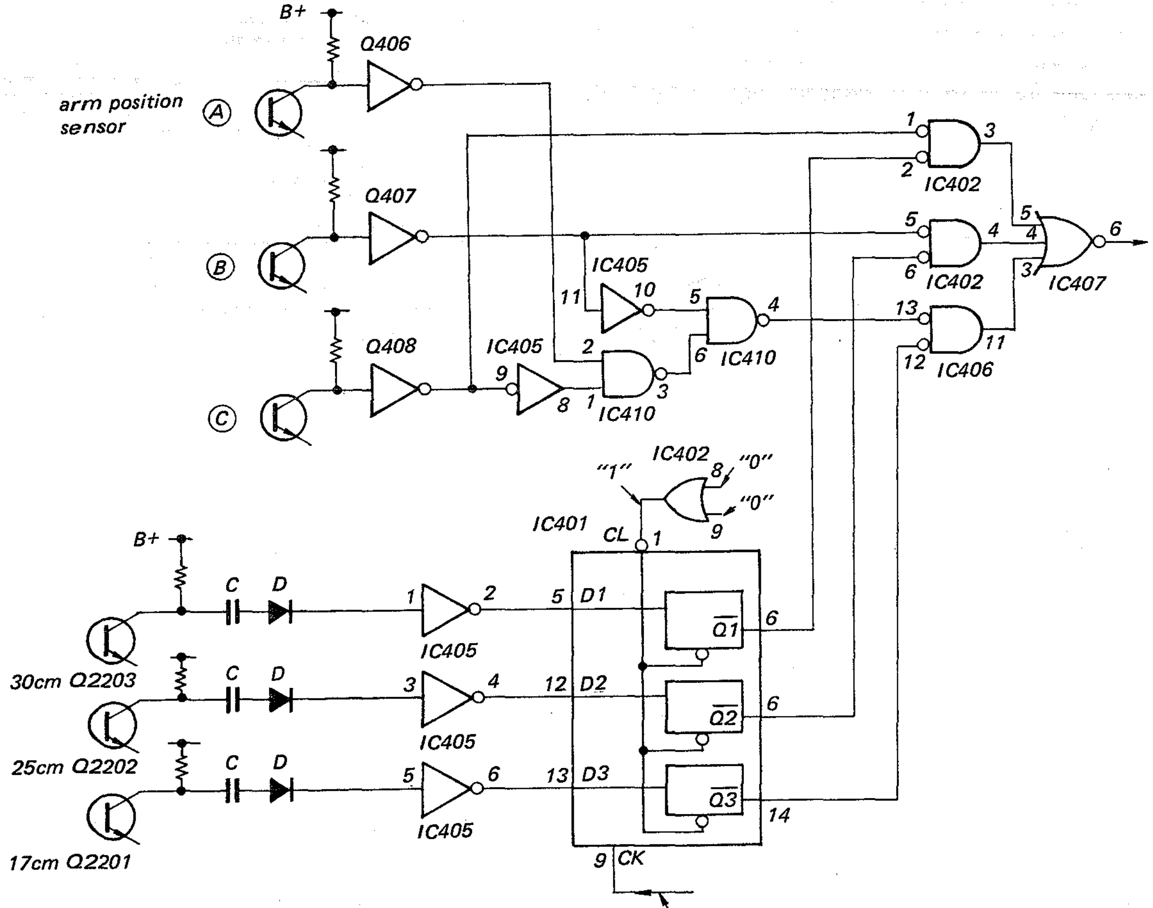

B+
Q406
arm position sensor
Ⓐ
Q407
Ⓑ
Q408
Ⓒ
IC405
11
10
5
4
IC410
2
6
IC405
9
8
1
3
IC410
1
2
3
IC402
5
4
6
IC402
13
11
12
IC406
5
4
3
6
IC407
IC402
"1"
8
"0"
"0"
9
IC401
CL
1
B+
C
D
1
2
5
D1
Q1
6
IC405
30cm Q2203
C
D
3
4
12
D2
Q2
6
IC405
25cm Q2202
C
D
5
6
13
D3
Q3
14
IC405
17cm Q2201
9
CK
"1"

Fig. 2-18

The outputs of the tonearm position sensor and of the record size detector are combined as follows.

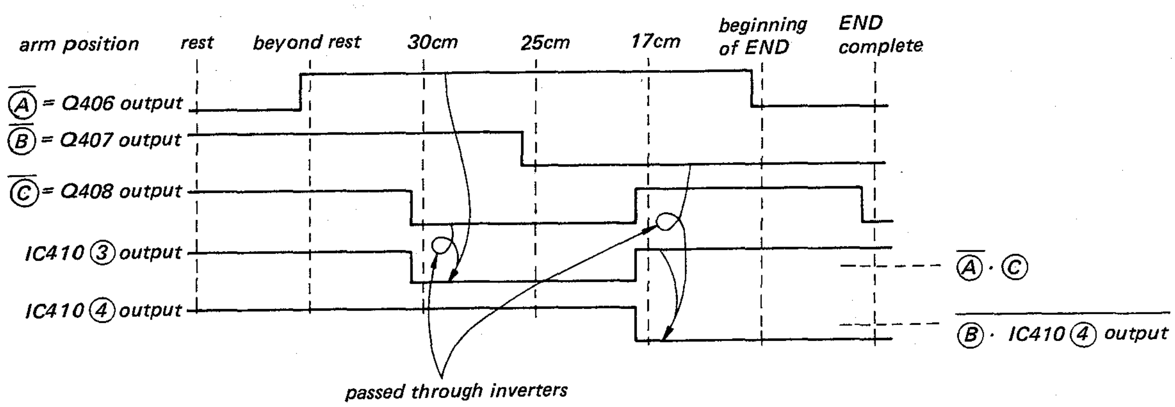

arm position
rest
beyond rest
30cm
25cm
17cm
beginning of END
END complete
$\overline{Ⓐ}$ = Q406 output
$\overline{Ⓑ}$ = Q407 output
$\overline{Ⓒ}$ = Q408 output
IC410 ③ output
IC410 ④ output
$\overline{Ⓐ \cdot Ⓒ}$
$\overline{Ⓑ \cdot \text{IC410 ④ output}}$
passed through inverters

Fig. 2-19

The 410 ④ output changes from "1" to "0" when the tonearm reaches the 17cm position.

The record size detector signal is obtained from IC401 as follows when the clear input (CL) to IC401 is "1" (that is, the data will not be cleared) and the CK input is "1" (strobe clock signal; D input is valid). Thus when the record size is detected and the drop point has been reached, the outputs IC402 ③, ④ and IC406 ⑪ are combined to give the negative drop point signal at IC407 ⑥.

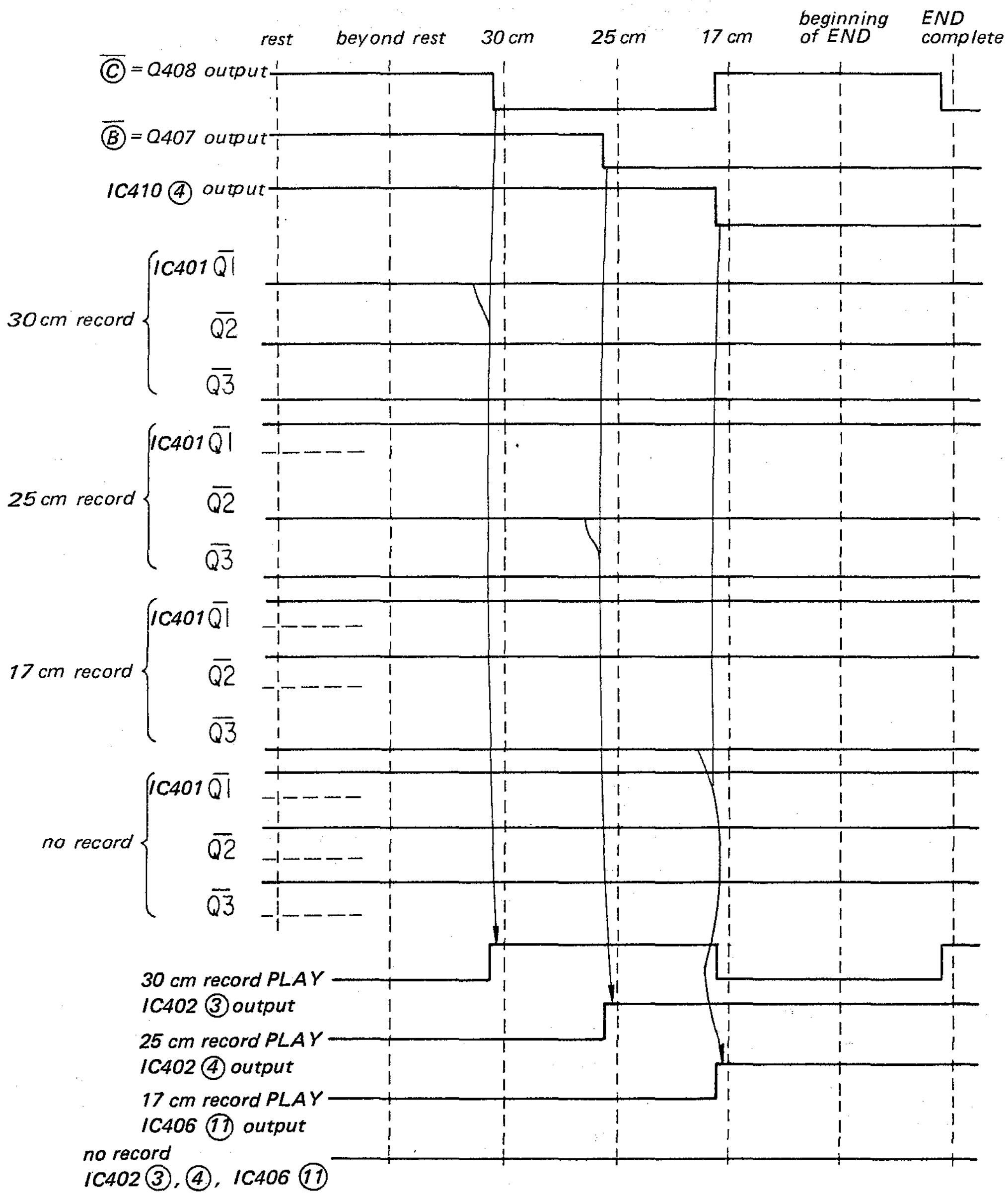

rest
beyond rest
30 cm
25 cm
17 cm
beginning of END
END complete
Ⓒ = Q408 output
Ⓑ = Q407 output
IC410 ④ output
30 cm record
IC401 $\overline{Q1}$
$\overline{Q2}$
$\overline{Q3}$
25 cm record
IC401 $\overline{Q1}$
$\overline{Q2}$
$\overline{Q3}$
17 cm record
IC401 $\overline{Q1}$
$\overline{Q2}$
$\overline{Q3}$
no record
IC401 $\overline{Q1}$
$\overline{Q2}$
$\overline{Q3}$
30 cm record PLAY
IC402 ③ output
25 cm record PLAY
IC402 ④ output
17 cm record PLAY
IC406 ⑪ output
no record
IC402 ③, ④, IC406 ⑪

Fig. 2-20

4. "No Record" Detection

The size of the standard records placed on the turntable is detected by the amount of light cut off by the record. When a record of a certain size is placed on the turntable, the lights for the smaller record size is also cut off. Therefore, the absence of a record can be determined from the signal for the 17 cm record size detector.

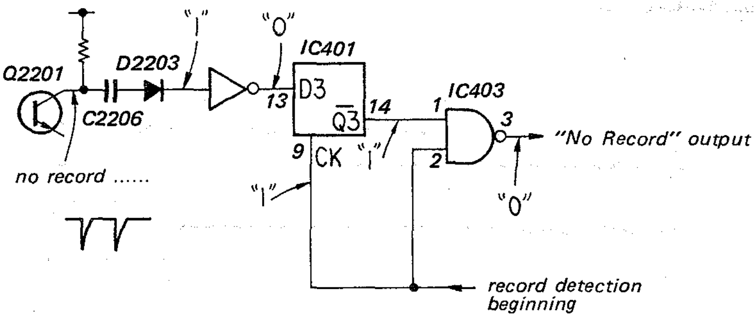

"1"
"0"
IC401
Q2201
D2203
C2206
13
D3
Q3
14
9
CK
"1"
"1"
IC403
1
3
2
"No Record" output
"0"
no record ......
record detection beginning

Fig. 2-21

The turntable does not start rotating immediately after the START button is pressed. Therefore, the "No Record" detection is not performed until the turntable starts rotating. IC401 is used for this purpose. Therefore, it is evident that the turntable stops rotating after about 2 seconds if the START button is pressed without record placed on the turntable.

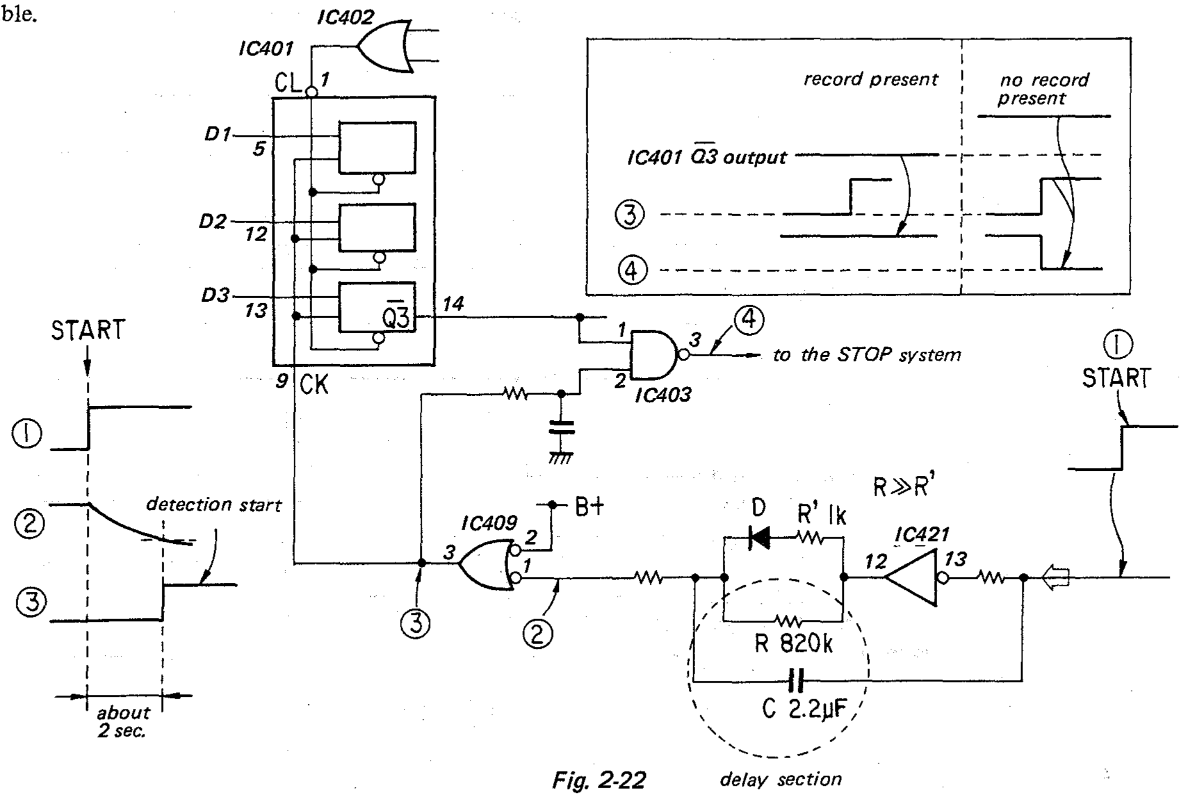

IC402
IC401
CL
1
D1
5
D2
12
D3
13
Q3
14
9
CK
record present
no record present
IC401 Q3 output
③
④
1
3
2
IC403
④
to the STOP system
START
①
②
detection start
③
about 2 sec.
IC409
B+
2
3
1
③
②
D
R' 1k
R≫R'
IC421
12
13
R 820k
C 2.2μF
①
START
delay section

Fig. 2-22

5. System Reset During Power On

The following discussion explains the power on system reset operations when the zero balance knob is not in the anti-skating position. See the diagram "MODE: POWER ON" (on pages 38, 39 and 40) for the explanations of the "0" and "1" levels of the various circuits.

The reset signal is generated by IC409 and resets all the locations.

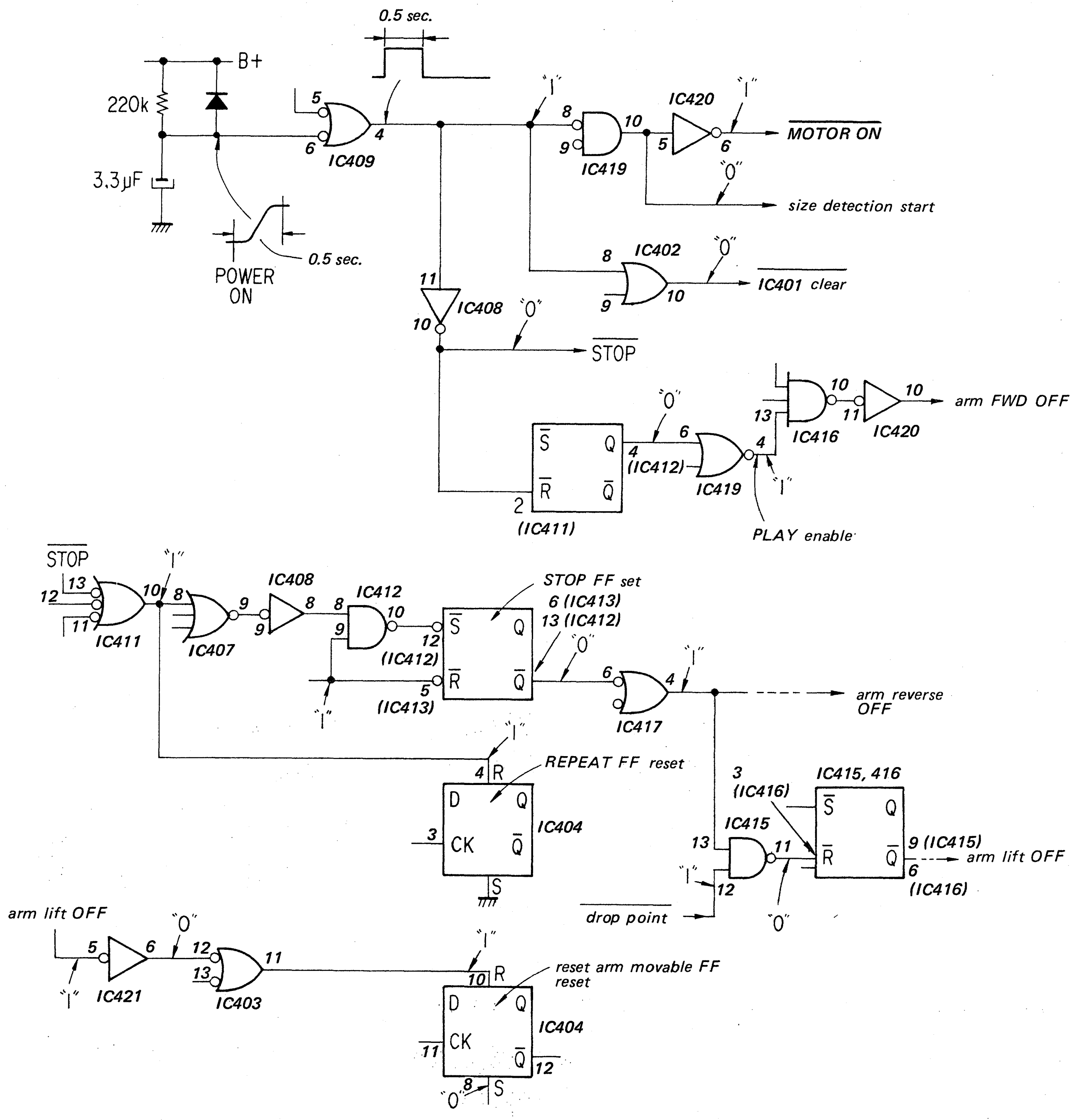

0.5 sec.
B+
220k
3.3μF
POWER ON
0.5 sec.
IC409
"1"
IC419
IC420
MOTOR ON
"0"
size detection start
IC402
IC401 clear
IC408
"0"
STOP
IC416
IC420
arm FWD OFF
"0"
IC412
IC419
PLAY enable
S Q
R Q̄
(IC411)
STOP
"1"
IC411
IC407
IC408
IC412
(IC412)
(IC413)
STOP FF set
6 (IC413)
13 (IC412)
"0"
"1"
IC417
arm reverse OFF
REPEAT FF reset
D Q
CK Q̄
IC404
IC415, 416
(IC416)
IC415
9 (IC415)
arm lift OFF
6 (IC416)
drop point
"0"
arm lift OFF
"0"
IC421
IC403
reset arm movable FF reset
IC404

Fig. 2-23

6. Tonearm Position During Power On

The tonearm does not move in either direction during POWER ON because both the arm FWD and the arm REVERSE signals would be off. This is indicated in Fig. 2-24.

As shown in Fig. 2-24, the portion enclosed within the line —·——· will be ignored during POWER ON because of the negative feedback (NF) provided by a coil to the high gain amplifier (IC422, Q412, Q413).

Since the drive to the tonearm is given via the horizontal drive coil (HC) the arm does not move if neither a positive nor a negative voltage is applied to this coil. Therefore, the stopping position can be adjusted by the horizontal offset control RV402.

The voltage output by the speed detecting coil (DC) is supplied to the servo amplifier as the negative feedback signal and acts as a brake on the movement of the arm.

There is a cancel coil (CC) apart from the fixed coils HC and DC.

The purpose of this cancel coil is to neutralize within the servo system the component of the signal when the arm is moving at a constant speed. Because of this it becomes possible to extract only the variation in the speed from the DC coil system.

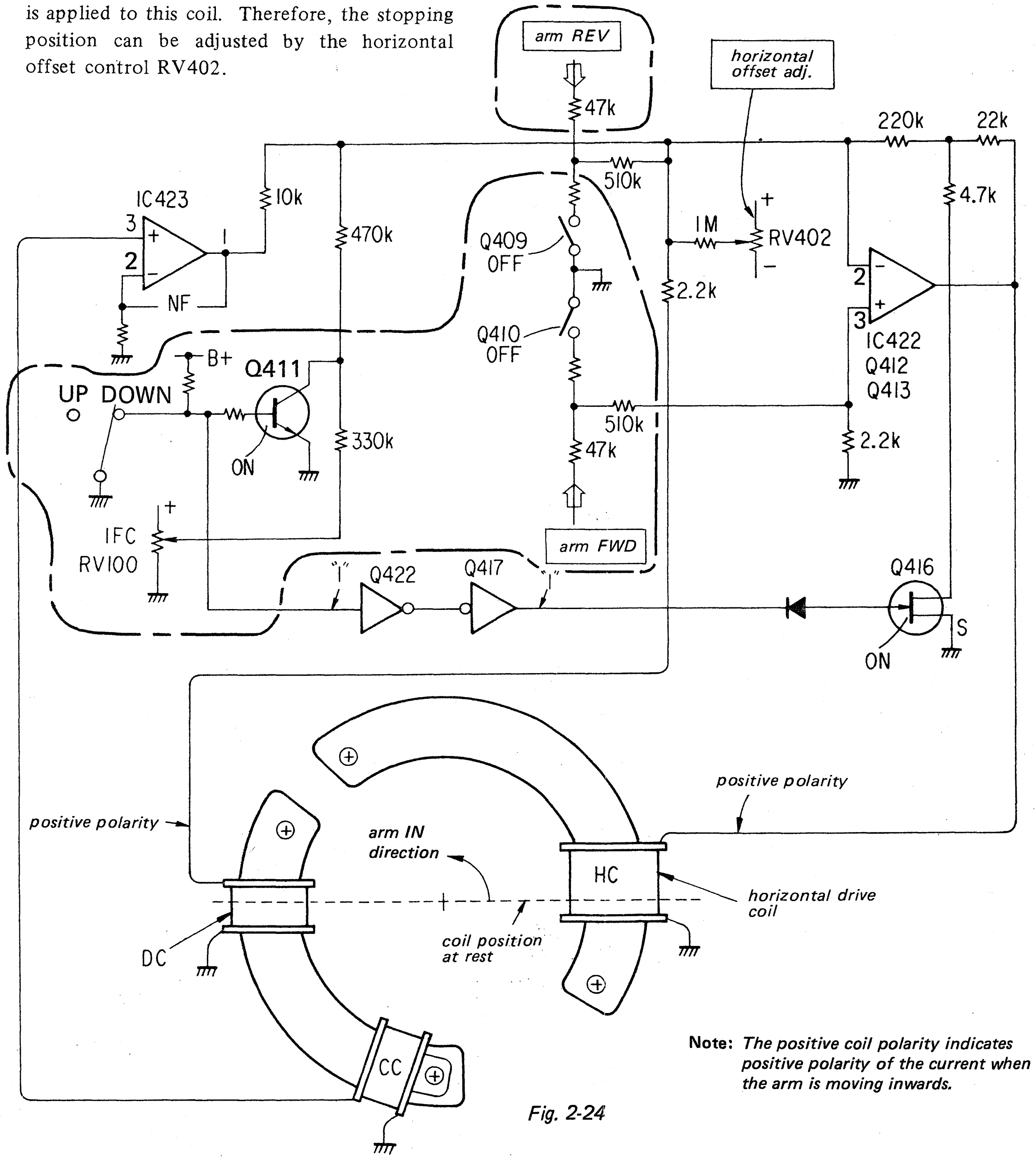

arm REV
47k
horizontal offset adj.
220k
22k
IC423
10k
470k
510k
Q409 OFF
1M
RV402
4.7k
NF
2.2k
Q410 OFF
B+
Q411
IC422
Q412
Q413
UP DOWN
510k
330k
47k
2.2k
ON
IFC RV100
arm FWD
"1"
Q422
Q417
"1"
Q416
ON
S
positive polarity
positive polarity
arm IN direction
HC
horizontal drive coil
DC
coil position at rest
CC

Fig. 2-24

Note: *The positive coil polarity indicates positive polarity of the current when the arm is moving inwards.*

6. Tonearm Position During Power On

The tonearm does not move in either direction during POWER ON because both the arm FWD and the arm REVERSE signals would be off. This is indicated in Fig. 2-24.

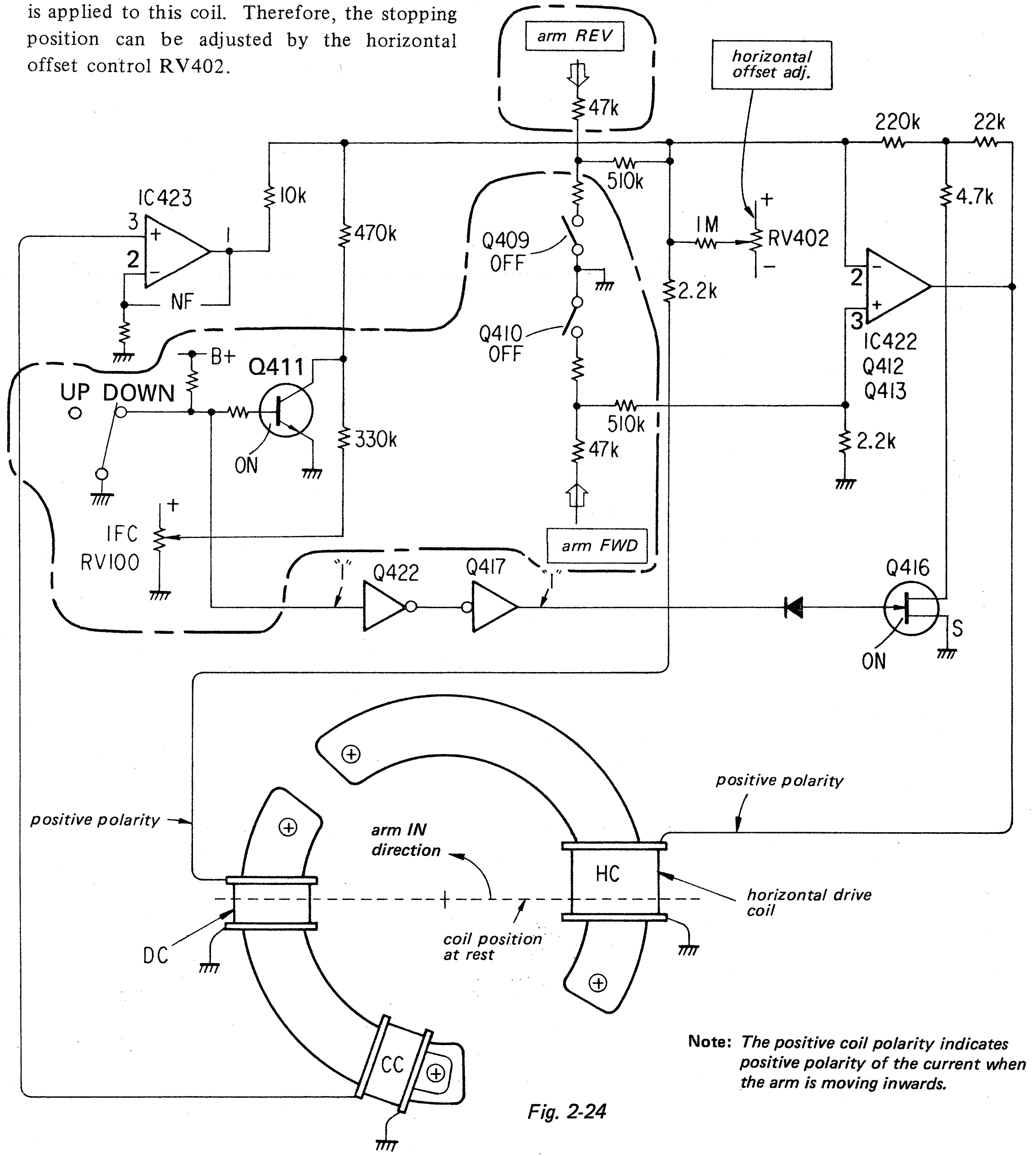
As shown in Fig. 2-24, the portion enclosed within the line —·—— · will be ignored during POWER ON because of the negative feedback (NF) provided by a coil to the high gain amplifier (IC422, Q412, Q413).

Since the drive to the tonearm is given via the horizontal drive coil (HC) the arm does not move if neither a positive nor a negative voltage is applied to this coil. Therefore, the stopping position can be adjusted by the horizontal offset control RV402.

The voltage output by the speed detecting coil (DC) is supplied to the servo amplifier as the negative feedback signal and acts as a brake on the movement of the arm.

There is a cancel coil (CC) apart from the fixed coils HC and DC.

The purpose of this cancel coil is to neutralize within the servo system the component of the signal when the arm is moving at a constant speed. Because of this it becomes possible to extract only the variation in the speed from the DC coil system.


arm REV
47k
horizontal offset adj.
220k
22k
IC423
10k
510k
4.7k
470k
Q409 OFF
1M
RV402
NF
2.2k
Q410 OFF
IC422
Q412
Q413
B+
Q411
UP DOWN
510k
47k
ON
330k
2.2k
IFC RV100
arm FWD
"1"
Q422
Q417
Q416
S
ON
positive polarity
positive polarity
arm IN direction
HC
horizontal drive coil
DC
coil position at rest
CC

Note: *The positive coil polarity indicates positive polarity of the current when the arm is moving inwards.*

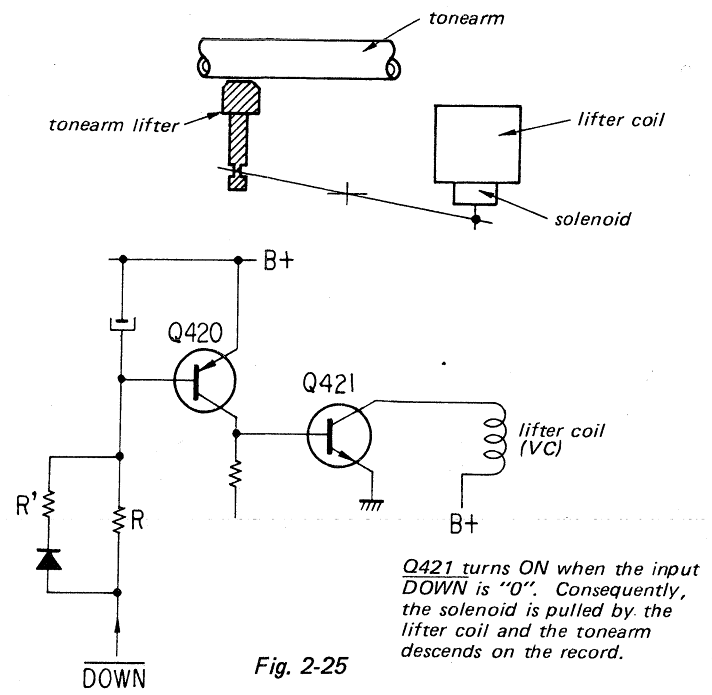
Fig. 2-24

7. Disk Light Circuit

The disk light (DL) brightness is reduced after leading in because then it is no longer necessary. The transistors Q418, 419 in the phono system control board are used when the full voltage is to be applied to the disk light and when these are OFF, the current flows through R506.

8. Lifter Coil Circuit

The lifter coil circuit is as shown in Fig. 2-25.


tonearm
tonearm lifter
lifter coil
solenoid
B+
Q420
Q421
lifter coil (VC)
R'
R
B+
DOWN

Q421 turns ON when the input DOWN is "0". Consequently, the solenoid is pulled by the lifter coil and the tonearm descends on the record.

Fig. 2-25

9. Return Detection

The return detection is performed as shown in Fig. 2-26 by IC423, Q414, Q415, IC422, etc., in the phono system control board.

Q414 turns OFF and Q415 turns ON in the PLAY zone because "Beginning of END" will be "1", and therefore there will be no gain in IC423.

When the "Beginning of END" signal is applied and Q414 turns ON, Q415 turns OFF and IC423 is in the high gain state. In this state, IC423 amplifies the voltage generated by the speed detection coil (DC). Consequently, a pulse output is obtained from IC422. The "0" level portion of this pulse output is used as the END signal.

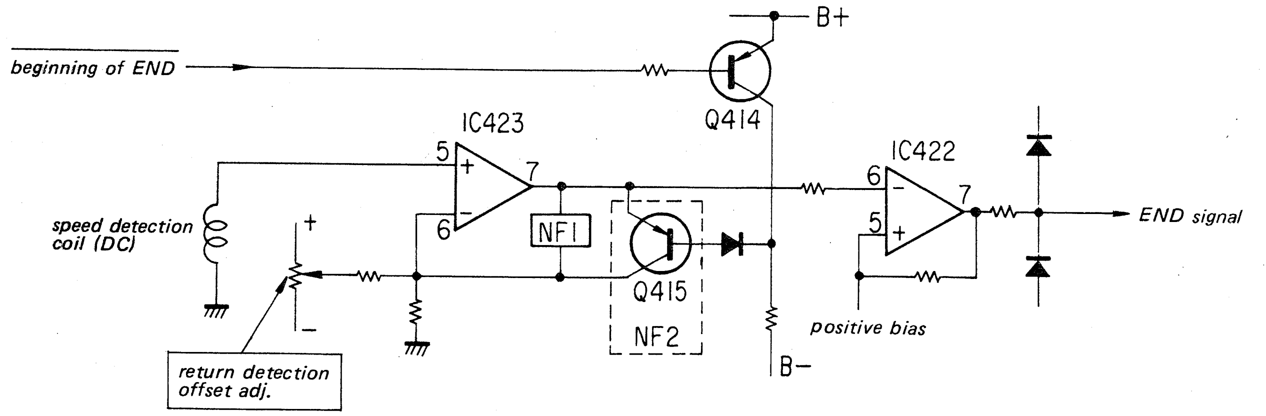
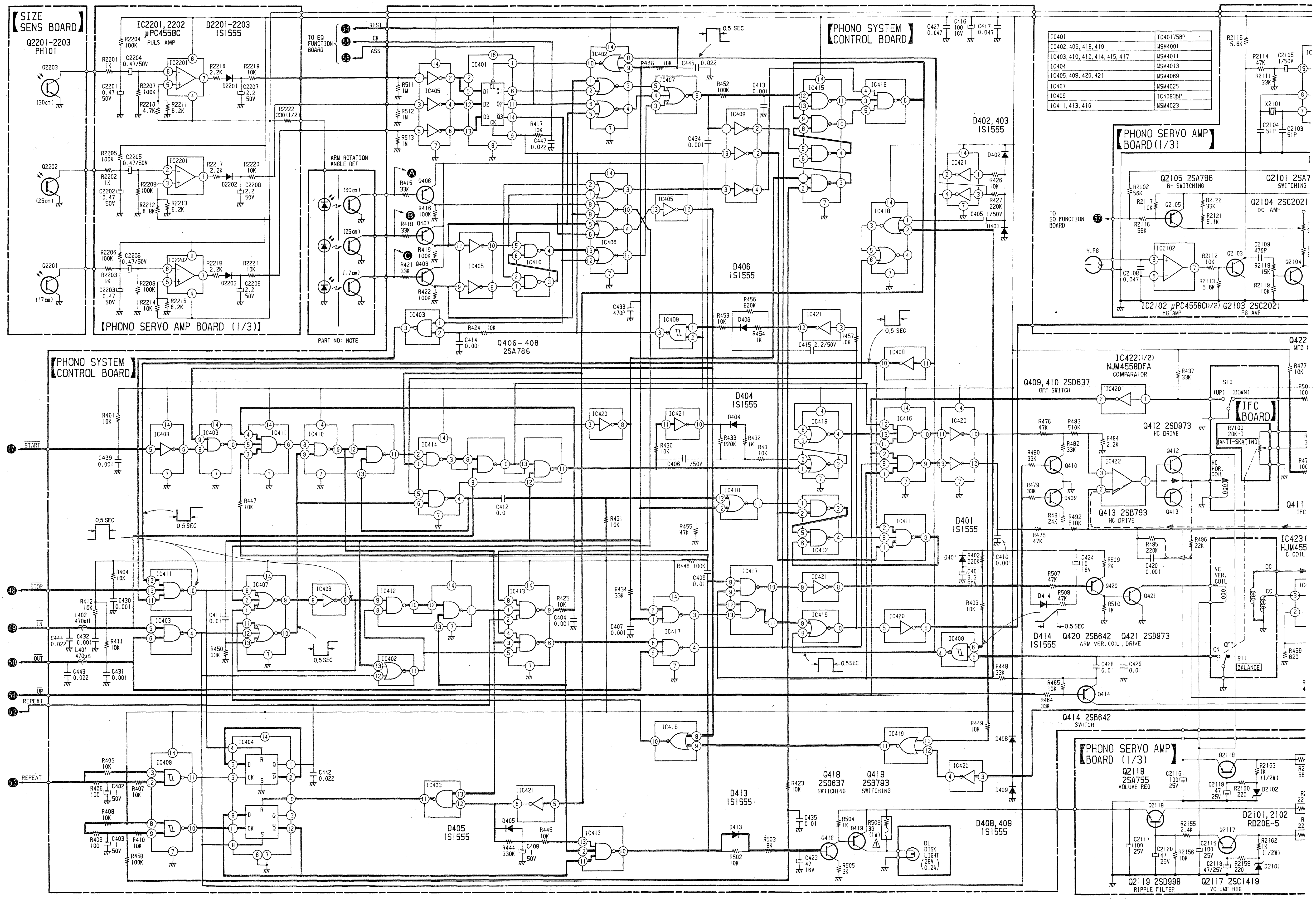

B+
beginning of END
Q414
IC423
IC422
speed detection coil (DC)
NF1
Q415
NF2
END signal
positive bias
B−
return detection offset adj.

Fig. 2-26

REFERENCE DATA

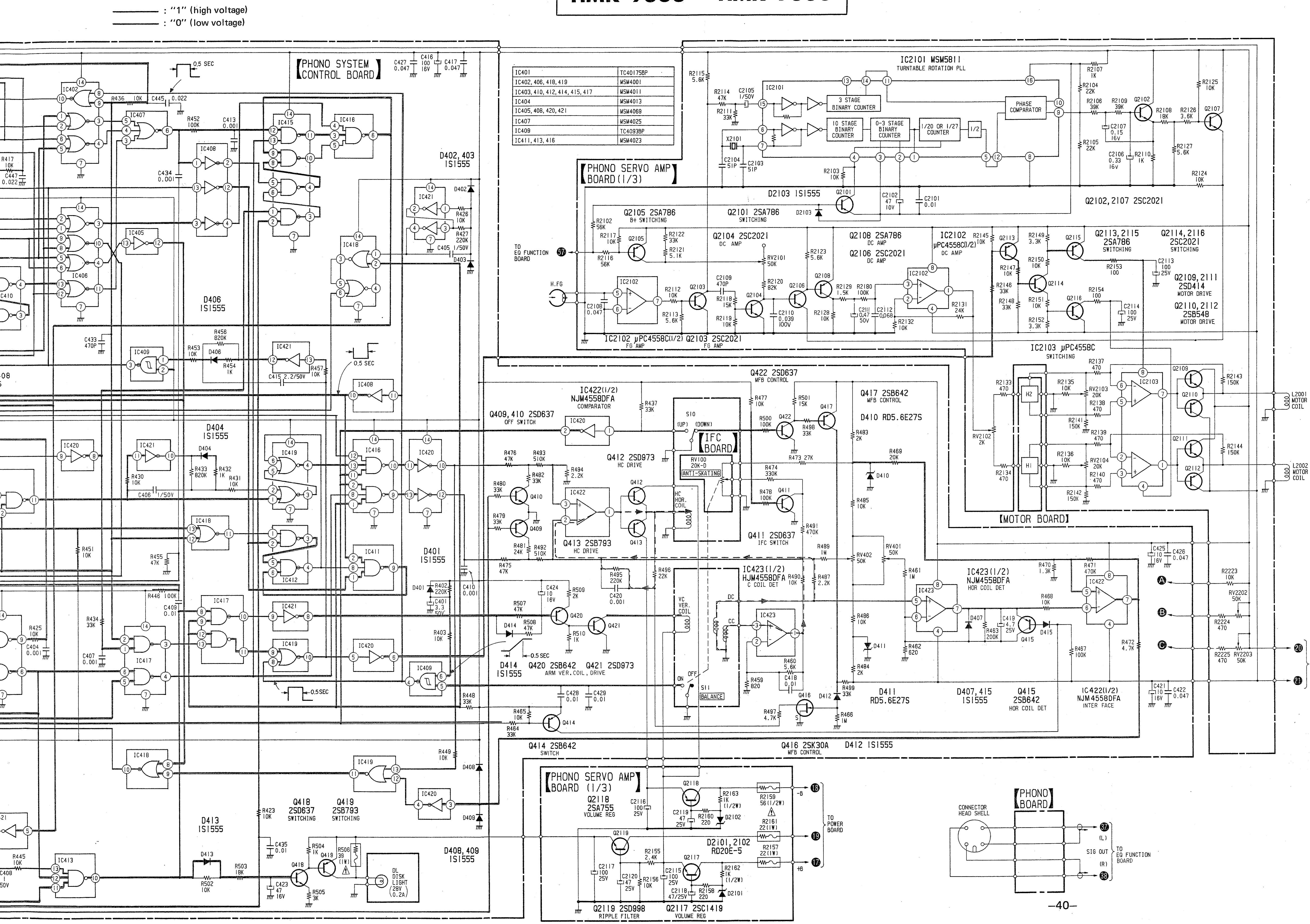
1. Phono Power On/Balance Off

─────── : "1" (high voltage)
═══════ : "0" (low voltage)



SIZE SENS BOARD
Q2201-2203
PH101
IC2201, 2202 μPC4558C PULS AMP
D2201-2203 1S1555
PHONO SERVO AMP BOARD (1/3)
ARM ROTATION ANGLE DET
PART NO: NOTE
TO EQ FUNCTION BOARD
REST
CK
ASS
0.5 SEC
PHONO SYSTEM CONTROL BOARD
Q406-408 2SA786
D402, 403 1S1555
D406 1S1555
D404 1S1555
D401 1S1555
D405 1S1555
D413 1S1555
D408, 409 1S1555
D414 1S1555
START
STOP
IN
OUT
UP
REPEAT
IC422(1/2) NJM4558DFA COMPARATOR
Q409, 410 2SD637 OFF SWITCH
Q412 2SD973 HC DRIVE
Q413 2SB793 HC DRIVE
Q420 2SB642
Q421 2SD973 ARM VER. COIL. DRIVE
Q414 2SB642 SWITCH
Q418 2SD637 SWITCHING
Q419 2SB793 SWITCHING
DL DISK LIGHT (28V) (0.2A)
S10 (UP) (DOWN)
IFC BOARD
ANTI-SKATING
HC HOR. COIL
VC VER. COIL
S11 BALANCE
ON OFF
H.FG
TO EQ FUNCTION BOARD
Q2105 2SA786 B+ SWITCHING
Q2101 2SA7 SWITCHING
Q2104 2SC2021 DC AMP
IC2102 μPC4558C(1/2) FG AMP
Q2103 2SC2021 FG AMP
Q2118 2SA755 VOLUME REG
Q2119 2SD998 RIPPLE FILTER
Q2117 2SC1419 VOLUME REG
D2101, 2102 RD20E-5
IC423 HJM455 C COIL

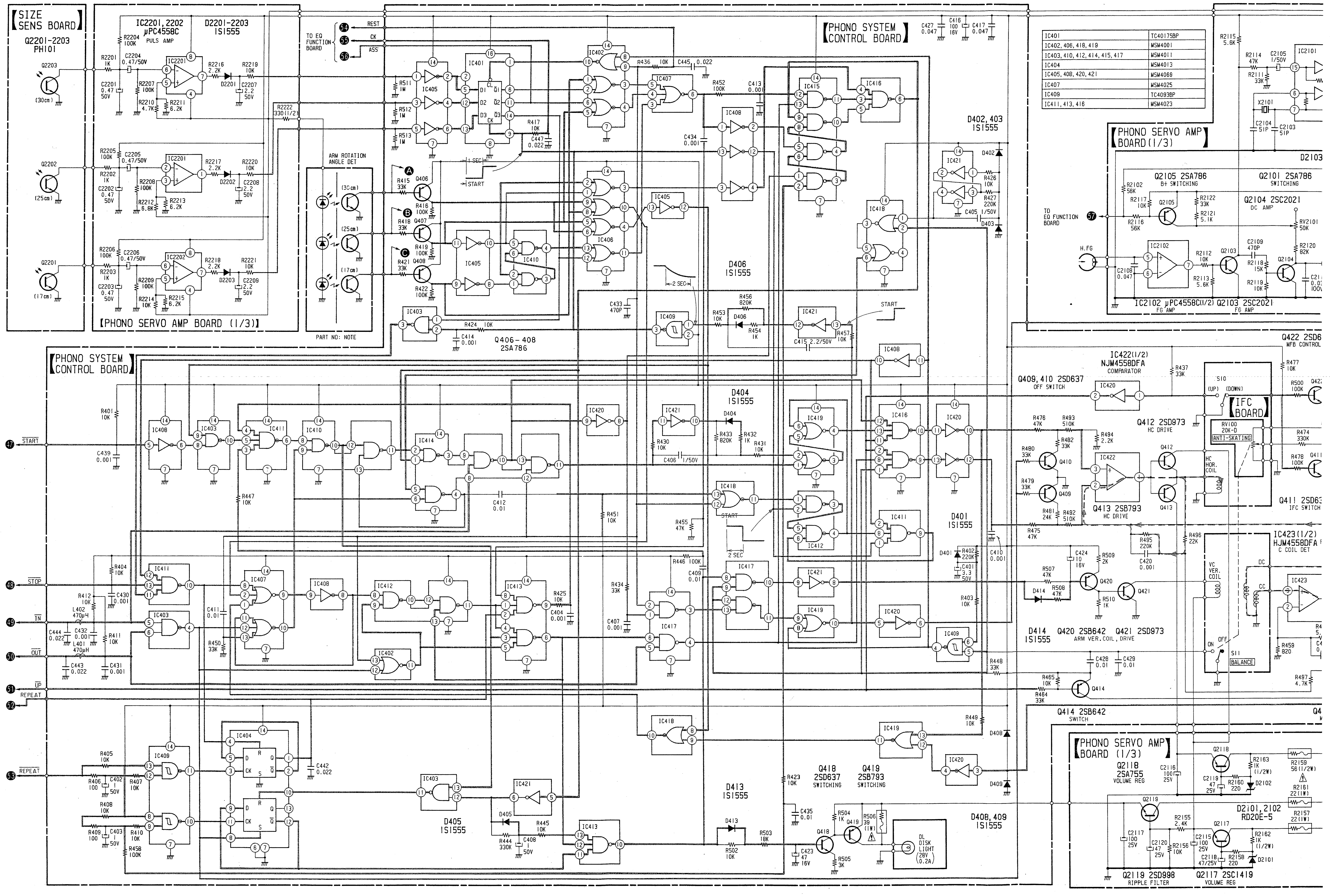
IC401	TC40175BP
IC402, 406, 418, 419	MSM4001
IC403, 410, 412, 414, 415, 417	MSM4011
IC404	MSM4013
IC405, 408, 420, 421	MSM4069
IC407	MSM4025
IC409	TC4093BP
IC411, 413, 416	MSM4023

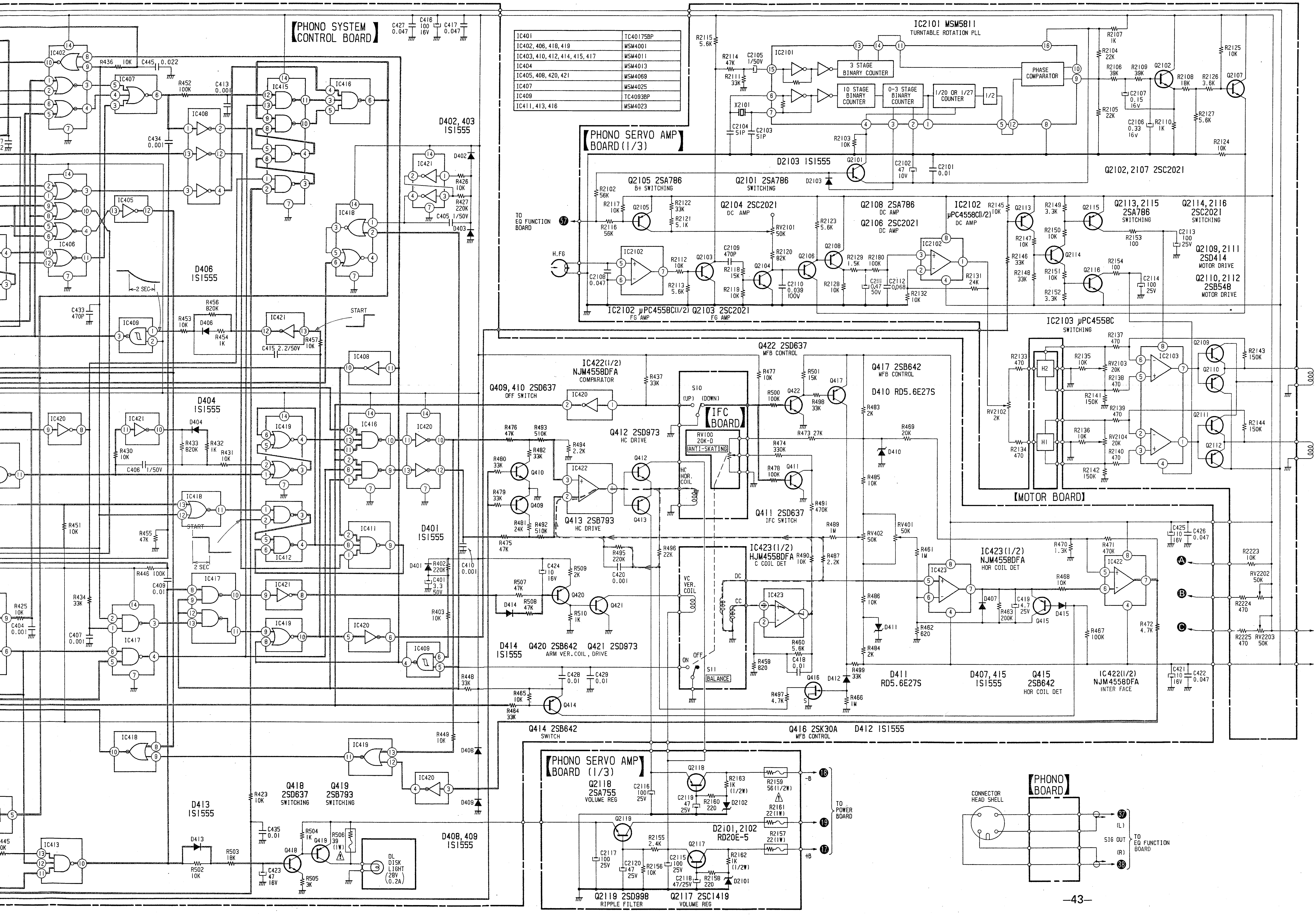

: "1" (high voltage)
: "0" (low voltage)
PHONO SYSTEM CONTROL BOARD
PHONO SERVO AMP BOARD (1/3)
IC2101 MSM5811
TURNTABLE ROTATION PLL
3 STAGE BINARY COUNTER
10 STAGE BINARY COUNTER
0-3 STAGE BINARY COUNTER
1/20 OR 1/27 COUNTER
1/2
PHASE COMPARATOR
X2101
D2103 1S1555
Q2102, 2107 2SC2021
Q2105 2SA786 B+ SWITCHING
Q2101 2SA786 SWITCHING
Q2104 2SC2021 DC AMP
Q2108 2SA786 DC AMP
Q2106 2SC2021 DC AMP
IC2102 μPC4558C(1/2) DC AMP
Q2113, 2115 2SA786 SWITCHING
Q2114, 2116 2SC2021 SWITCHING
Q2109, 2111 2SD414 MOTOR DRIVE
Q2110, 2112 2SB548 MOTOR DRIVE
TO EQ FUNCTION BOARD
H.FG
IC2102 μPC4558C(1/2) FG AMP
Q2103 2SC2021 FG AMP
IC2103 μPC4558C SWITCHING
H2
H1
L2001 MOTOR COIL
L2002 MOTOR COIL
MOTOR BOARD
D402, 403 1S1555
D406 1S1555
0.5 SEC
D404 1S1555
IC422(1/2) NJM4558DFA COMPARATOR
Q409, 410 2SD637 OFF SWITCH
Q422 2SD637 MFB CONTROL
Q417 2SB642 MFB CONTROL
D410 RD5.6E27S
S10 (UP) (DOWN)
IFC BOARD
RV100 20K-D
ANTI-SKATING
Q412 2SD973 HC DRIVE
HC HOR. COIL
Q413 2SB793 HC DRIVE
Q411 2SD637 IFC SWITCH
D401 1S1555
IC423(1/2) HJM4558DFA C COIL DET
IC423(1/2) NJM4558DFA HOR COIL DET
VC VER. COIL
DC
CC
S11 BALANCE
ON OFF
D414 1S1555
Q420 2SB642 ARM VER. COIL, DRIVE
Q421 2SD973
D411 RD5.6E27S
D407, 415 1S1555
Q415 2SB642 HOR COIL DET
IC422(1/2) NJM4558DFA INTER FACE
Q414 2SB642 SWITCH
Q416 2SK30A MFB CONTROL
D412 1S1555
Ⓐ
Ⓑ
Ⓒ
⑳
㉑
TO POWER BOARD
PHONO SERVO AMP BOARD (1/3)
Q2118 2SA755 VOLUME REG
Q2119 2SD998 RIPPLE FILTER
Q2117 2SC1419 VOLUME REG
D2101, 2102 RD20E-5
⑱ -B
⑲
⑰ +B
TO POWER BOARD
D413 1S1555
Q418 2SD637 SWITCHING
Q419 2SB793 SWITCHING
D408, 409 1S1555
DL DISK LIGHT (28V 0.2A)
0.5SEC
CONNECTOR HEAD SHELL
PHONO BOARD
㊲ (L)
SIG OUT
(R) ㊳
TO EQ FUNCTION BOARD

IC401	TC40175BP
IC402, 406, 418, 419	MSM4001
IC403, 410, 412, 414, 415, 417	MSM4011
IC404	MSM4013
IC405, 408, 420, 421	MSM4069
IC407	MSM4025
IC409	TC4093BP
IC411, 413, 416	MSM4023

2. Phono Start 30cm

———— : "1" (high voltage)
———— : "0" (low voltage)

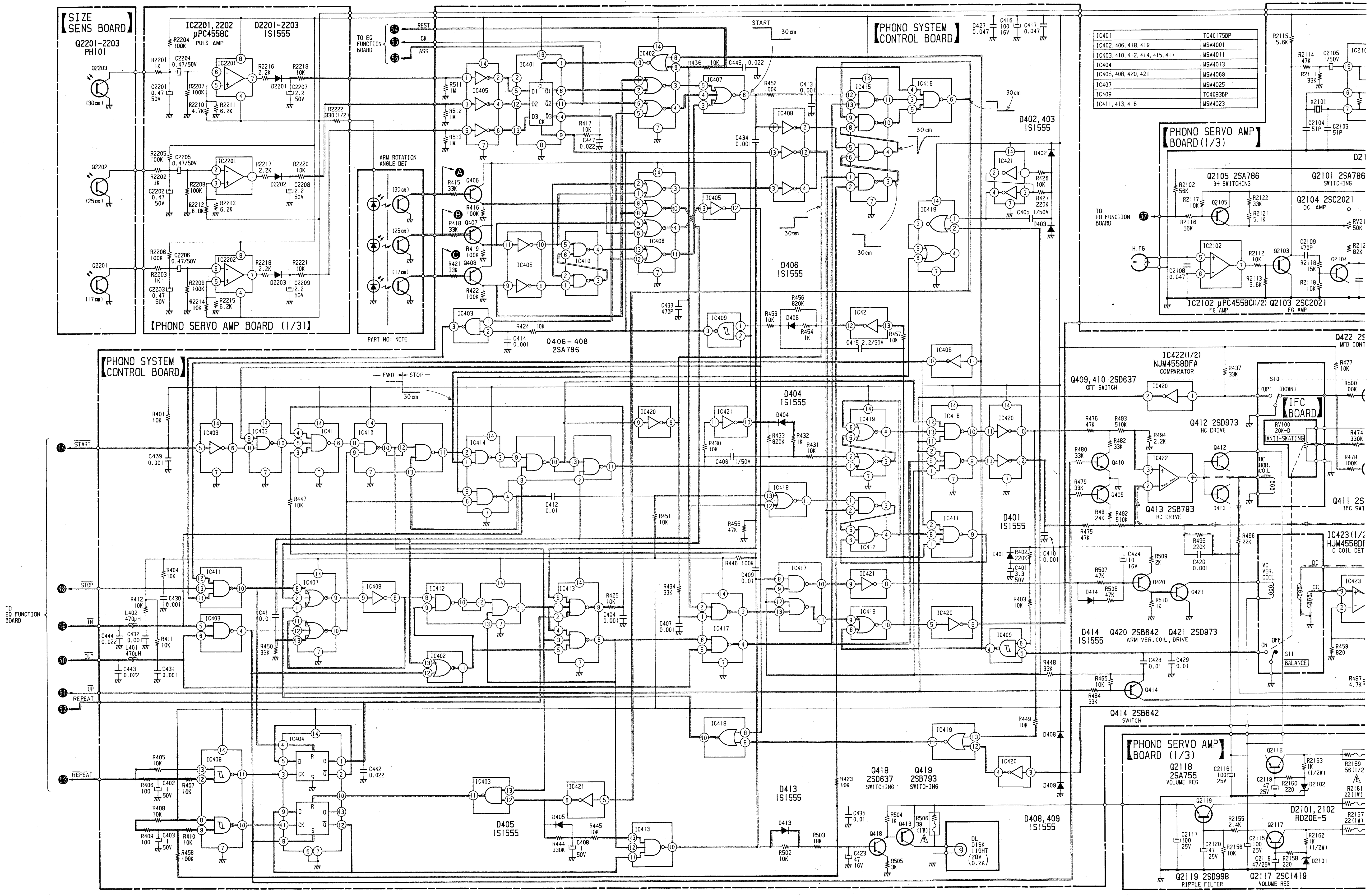

SIZE SENS BOARD
Q2201-2203 PH101
(30cm)
(25cm)
(17cm)
IC2201, 2202 μPC4558C PULS AMP
D2201-2203 1S1555
PHONO SERVO AMP BOARD (1/3)
ARM ROTATION ANGLE DET
PART NO: NOTE
TO EQ FUNCTION BOARD
REST
CK
ASS
Q406-408 2SA786
PHONO SYSTEM CONTROL BOARD
IC401 TC40175BP
IC402, 406, 418, 419 MSM4001
IC403, 410, 412, 414, 415, 417 MSM4011
IC404 MSM4013
IC405, 408, 420, 421 MSM4069
IC407 MSM4025
IC409 TC4093BP
IC411, 413, 416 MSM4023
D402, 403 1S1555
D406 1S1555
D404 1S1555
D401 1S1555
D405 1S1555
D413 1S1555
D408, 409 1S1555
D414 1S1555
1 SEC
START
2 SEC
PHONO SERVO AMP BOARD (1/3)
Q2105 2SA786 B+ SWITCHING
Q2101 2SA786 SWITCHING
Q2104 2SC2021 DC AMP
H.FG
IC2102 μPC4558C(1/2) FG AMP
Q2103 2SC2021 FG AMP
Q422 2SD6 MFB CONTROL
IC422(1/2) NJM4558DFA COMPARATOR
Q409, 410 2SD637 OFF SWITCH
IFC BOARD
S10 (UP) (DOWN)
RV100 20K-D ANTI-SKATING
Q412 2SD973 HC DRIVE
Q413 2SB793 HC DRIVE
HC HOR. COIL
Q411 2SD63 IFC SWITCH
IC423(1/2) HJM4558DFA C COIL DET
VC VER. COIL
Q420 2SB642 Q421 2SD973 ARM VER. COIL, DRIVE
S11 BALANCE
ON OFF
Q414 2SB642 SWITCH
START
STOP
IN
OUT
UP
REPEAT
REPEAT
TO EQ FUNCTION BOARD
Q418 2SD637 SWITCHING
Q419 2SB793 SWITCHING
DL DISK LIGHT (28V) (0.2A)
PHONO SERVO AMP BOARD (1/3)
Q2118 2SA755 VOLUME REG
D2101, 2102 RD20E-5
Q2119 2SD998 RIPPLE FILTER
Q2117 2SC1419 VOLUME REG


PHONO SYSTEM CONTROL BOARD
PHONO SERVO AMP BOARD (1/3)
IC2101 MSM5811
TURNTABLE ROTATION PLL
3 STAGE BINARY COUNTER
10 STAGE BINARY COUNTER
0-3 STAGE BINARY COUNTER
1/20 OR 1/27 COUNTER
1/2
PHASE COMPARATOR
X2101
D2103 1S1555
Q2102, 2107 2SC2021
Q2105 2SA786
B+ SWITCHING
Q2101 2SA786
SWITCHING
Q2104 2SC2021
DC AMP
Q2108 2SA786
DC AMP
Q2106 2SC2021
DC AMP
IC2102 µPC4558C(1/2)
DC AMP
Q2113, 2115 2SA786
SWITCHING
Q2114, 2116 2SC2021
SWITCHING
Q2109, 2111 2SD414
MOTOR DRIVE
Q2110, 2112 2SB548
MOTOR DRIVE
TO EQ FUNCTION BOARD
H.FG
IC2102 µPC4558C(1/2) FG AMP
Q2103 2SC2021 FG AMP
IC2103 µPC4558C
SWITCHING
H2
H1
L2001 MOTOR COIL
L2002 MOTOR COIL
MOTOR BOARD
D402, 403 1S1555
D406 1S1555
D404 1S1555
D401 1S1555
D413 1S1555
START
2 SEC
Q422 2SD637
MFB CONTROL
Q417 2SB642
MFB CONTROL
D410 RD5.6E27S
IC422(1/2) NJM4558DFA
COMPARATOR
Q409, 410 2SD637
OFF SWITCH
Q412 2SD973
HC DRIVE
Q413 2SB793
HC DRIVE
S10 (UP) (DOWN)
IFC BOARD
RV100 20K-D
ANTI-SKATING
HC HOR. COIL
Q411 2SD637
IFC SWITCH
IC423(1/2) HJM4558DFA
C COIL DET
VC VER. COIL
DC
CC
ON OFF
S11 BALANCE
IC423(1/2) NJM4558DFA
HOR COIL DET
D414 1S1555
Q420 2SB642
Q421 2SD973
ARM VER. COIL, DRIVE
D411 RD5.6E27S
D407, 415 1S1555
Q415 2SB642
HOR COIL DET
IC422(1/2) NJM4558DFA
INTER FACE
Q414 2SB642
SWITCH
Q416 2SK30A
MFB CONTROL
D412 1S1555
TO POWER BOARD
Q418 2SD637
SWITCHING
Q419 2SB793
SWITCHING
D408, 409 1S1555
DL DISK LIGHT (28V 0.2A)
PHONO SERVO AMP BOARD (1/3)
Q2118 2SA755
VOLUME REG
D2101, 2102 RD20E-5
Q2119 2SD998
RIPPLE FILTER
Q2117 2SC1419
VOLUME REG
TO POWER BOARD
CONNECTOR HEAD SHELL
PHONO BOARD
SIG OUT (L) (R)
TO EQ FUNCTION BOARD

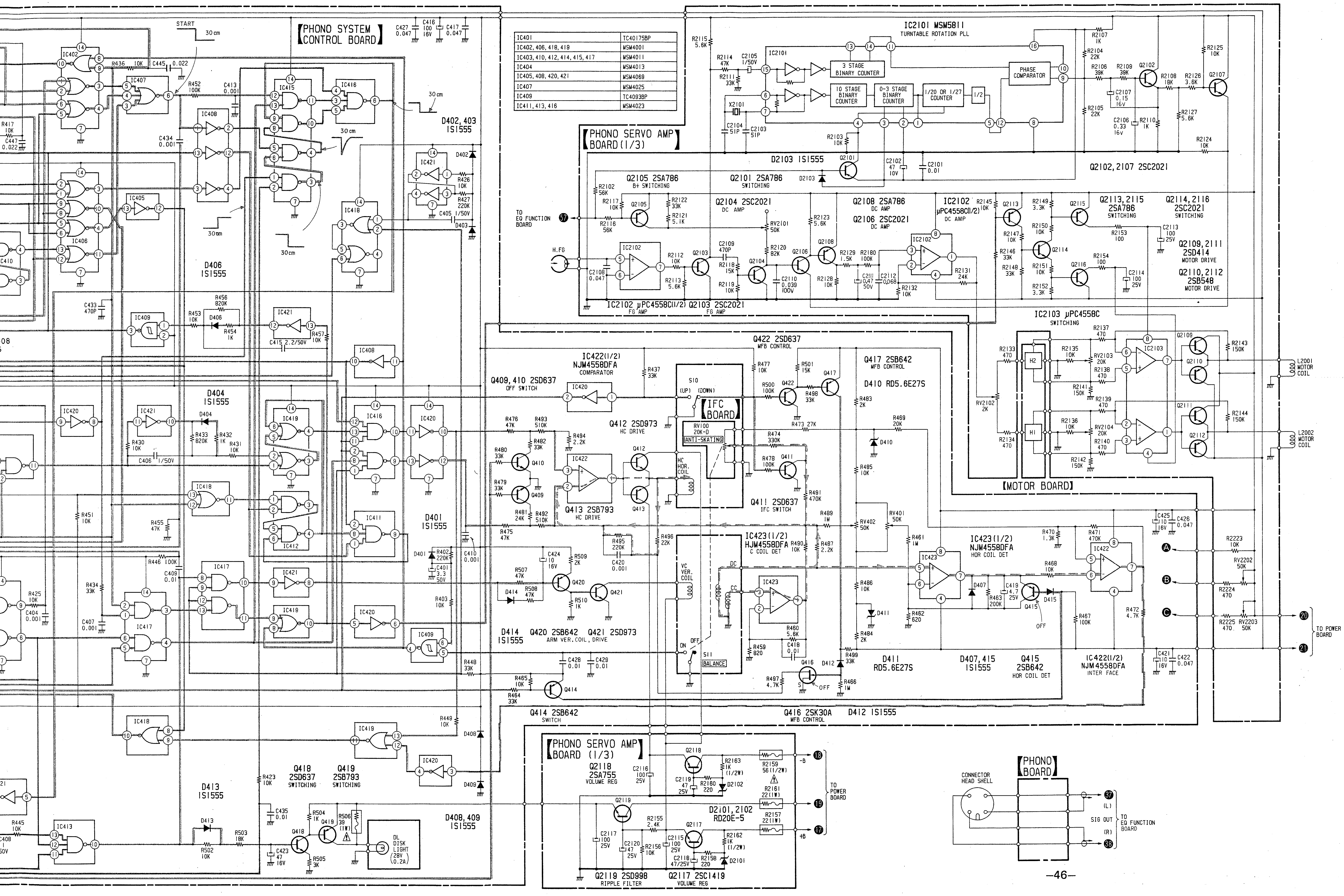
IC401	TC40175BP
IC402, 406, 418, 419	MSM4001
IC403, 410, 412, 414, 415, 417	MSM4011
IC404	MSM4013
IC405, 408, 420, 421	MSM4069
IC407	MSM4025
IC409	TC4093BP
IC411, 413, 416	MSM4023

3. Phono Down 30cm

: "1" (high voltage)
: "0" (low voltage)


SIZE SENS BOARD
Q2201-2203 PH101
Q2203
(30cm)
Q2202
(25cm)
Q2201
(17cm)
IC2201, 2202 μPC4558C
PULS AMP
D2201-2203 1S1555
PHONO SERVO AMP BOARD (1/3)
TO EQ FUNCTION BOARD
REST
CK
ASS
ARM ROTATION ANGLE DET
PART NO: NOTE
Q406-408 2SA786
IC401
IC402
IC403
IC405
IC406
IC407
IC408
IC409
IC410
START
30cm
PHONO SYSTEM CONTROL BOARD
IC415
IC416
IC418
IC421
D402, 403 1S1555
D406 1S1555
PHONO SERVO AMP BOARD (1/3)
Q2105 2SA786
B+ SWITCHING
Q2101 2SA786
SWITCHING
Q2104 2SC2021
DC AMP
TO EQ FUNCTION BOARD
H.FG
IC2102 μPC4558C(1/2) FG AMP
Q2103 2SC2021 FG AMP
Q422 2S
MFB CONT
PHONO SYSTEM CONTROL BOARD
FWD
STOP
START
STOP
IN
OUT
UP
REPEAT
REPEAT
TO EQ FUNCTION BOARD
IC411
IC412
IC413
IC414
IC417
IC419
IC420
IC404
D404 1S1555
D401 1S1555
D405 1S1555
D413 1S1555
D414 1S1555
D408, 409 1S1555
IC422(1/2) NJM4558DFA
COMPARATOR
Q409, 410 2SD637
OFF SWITCH
Q412 2SD973
HC DRIVE
Q413 2SB793
HC DRIVE
S10
(UP)
(DOWN)
IFC BOARD
RV100 20K-D
ANTI-SKATING
HC HOR. COIL
Q411 2S
IFC SWI
IC423(1/2) HJM4558D
C COIL DET
VC VER. COIL
Q420 2SB642
Q421 2SD973
ARM VER. COIL DRIVE
S11
BALANCE
ON
OFF
Q414 2SB642
SWITCH
Q418 2SD637
SWITCHING
Q419 2SB793
SWITCHING
DL DISK LIGHT (28V 0.2A)
PHONO SERVO AMP BOARD (1/3)
Q2118 2SA755
VOLUME REG
D2101, 2102 RD20E-5
Q2119 2SD998
RIPPLE FILTER
Q2117 2SC1419
VOLUME REG

IC401	TC40175BP
IC402, 406, 418, 419	MSM4001
IC403, 410, 412, 414, 415, 417	MSM4011
IC404	MSM4013
IC405, 408, 420, 421	MSM4069
IC407	MSM4025
IC409	TC4093BP
IC411, 413, 416	MSM4023

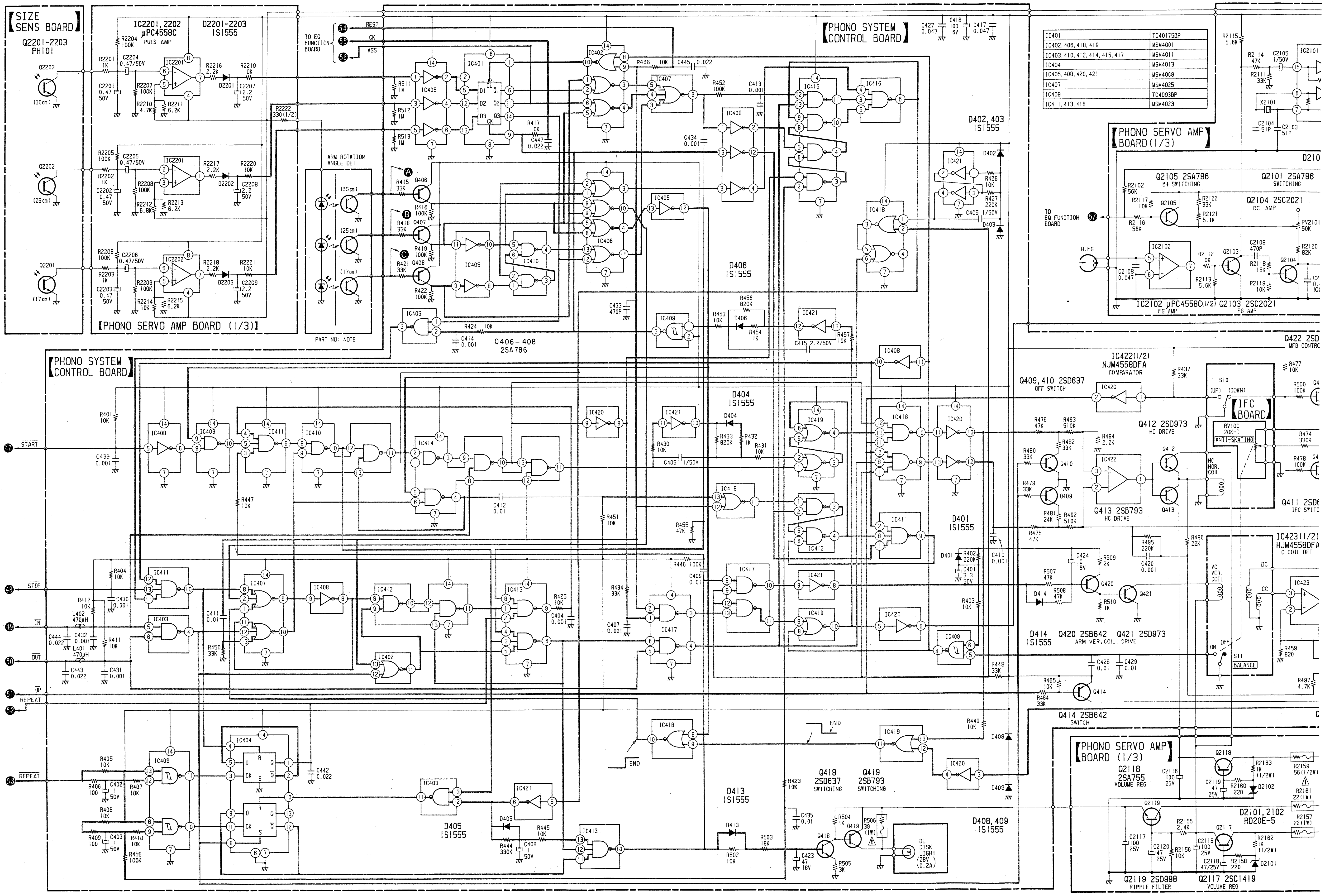


IC401	TC40175BP
IC402, 406, 418, 419	MSM4001
IC403, 410, 412, 414, 415, 417	MSM4011
IC404	MSM4013
IC405, 408, 420, 421	MSM4069
IC407	MSM4025
IC409	TC4093BP
IC411, 413, 416	MSM4023

【PHONO SYSTEM CONTROL BOARD】
START
30cm
D402, 403 1S1555
D406 1S1555
D404 1S1555
D401 1S1555
D413 1S1555
D408, 409 1S1555
Q418 2SD637 SWITCHING
Q419 2SB793 SWITCHING
DL DISK LIGHT (28V 0.2A)
【PHONO SERVO AMP BOARD (1/3)】
IC2101 MSM5811 TURNTABLE ROTATION PLL
3 STAGE BINARY COUNTER
10 STAGE BINARY COUNTER
0-3 STAGE BINARY COUNTER
1/20 OR 1/27 COUNTER
1/2
PHASE COMPARATOR
D2103 1S1555
Q2102, 2107 2SC2021
Q2105 2SA786 B+ SWITCHING
Q2101 2SA786 SWITCHING
Q2104 2SC2021 DC AMP
Q2108 2SA786 DC AMP
Q2106 2SC2021 DC AMP
IC2102 μPC4558C(2/2) DC AMP
Q2113, 2115 2SA786 SWITCHING
Q2114, 2116 2SC2021 SWITCHING
Q2109, 2111 2SD414 MOTOR DRIVE
Q2110, 2112 2SB548 MOTOR DRIVE
TO EQ FUNCTION BOARD
H.FG
IC2102 μPC4558C(1/2) FG AMP
Q2103 2SC2021 FG AMP
IC2103 μPC4558C SWITCHING
L2001 MOTOR COIL
L2002 MOTOR COIL
【MOTOR BOARD】
Q422 2SD637 MFB CONTROL
Q417 2SB642 MFB CONTROL
D410 RD5.6E27S
IC422(1/2) NJM4558DFA COMPARATOR
Q409, 410 2SD637 OFF SWITCH
Q412 2SD973 HC DRIVE
Q413 2SB793 HC DRIVE
S10 (UP) (DOWN)
【IFC BOARD】
RV100 20K-D ANTI-SKATING
HC HOR. COIL
Q411 2SD637 IFC SWITCH
IC423(1/2) HJM4558DFA C COIL DET
VC VER. COIL
DC
CC
S11 BALANCE
ON OFF
IC423(1/2) NJM4558DFA HOR COIL DET
D414 1S1555
Q420 2SB642 ARM VER. COIL, DRIVE
Q421 2SD973
Q414 2SB642 SWITCH
Q416 2SK30A MFB CONTROL
D412 1S1555
D411 RD5.6E27S
D407, 415 1S1555
Q415 2SB642 HOR COIL DET
IC422(1/2) NJM4558DFA INTER FACE
TO POWER BOARD
【PHONO SERVO AMP BOARD (1/3)】
Q2118 2SA755 VOLUME REG
D2101, 2102 RD20E-5
Q2119 2SD998 RIPPLE FILTER
Q2117 2SC1419 VOLUME REG
TO POWER BOARD
CONNECTOR HEAD SHELL
【PHONO BOARD】
(L)
SIG OUT
(R)
TO EQ FUNCTION BOARD

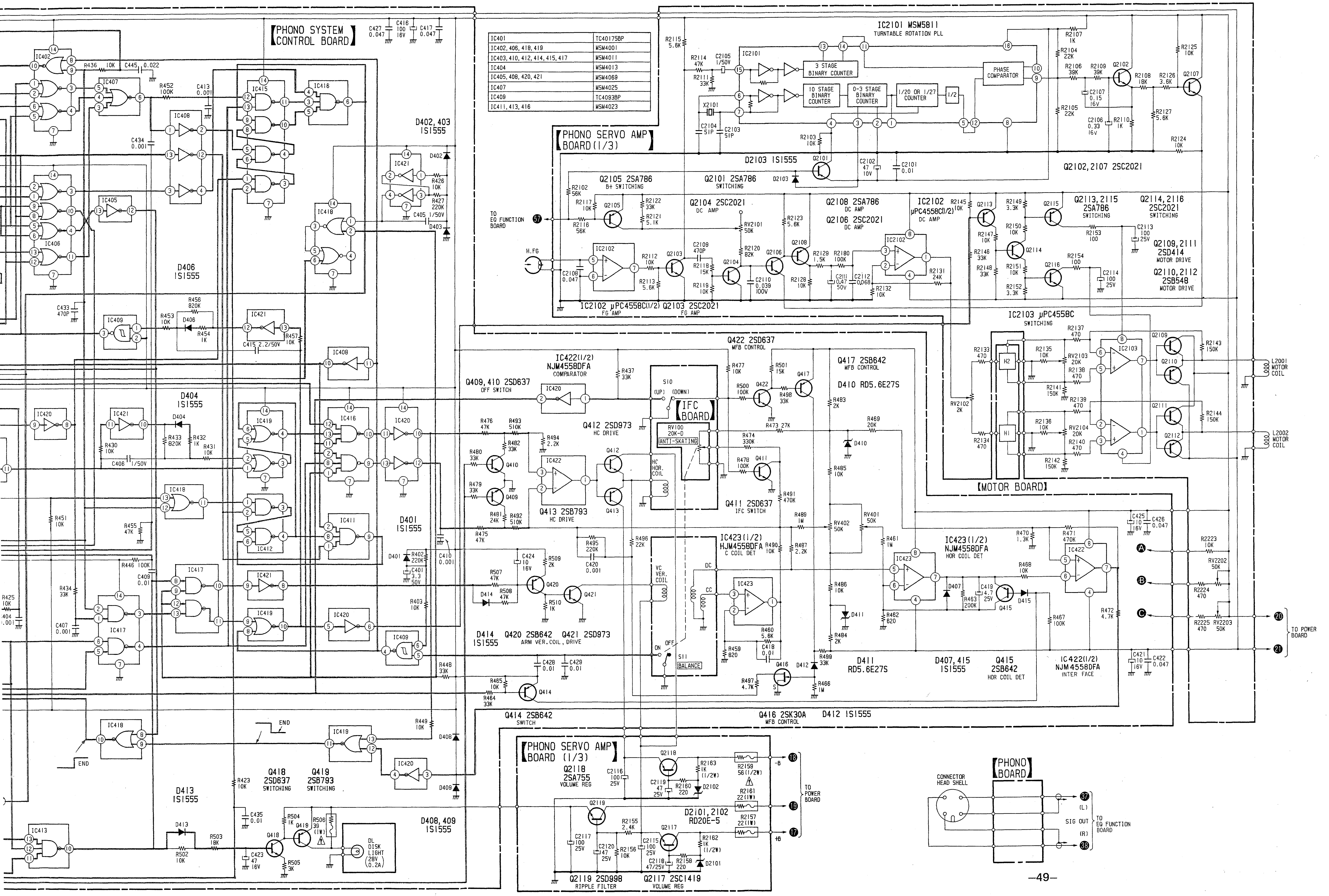
4. Phono End

: "1" (high voltage)
: "0" (low voltage)



IC401	TC4017BP
IC402, 406, 418, 419	MSM4001
IC403, 410, 412, 414, 415, 417	MSM4011
IC404	MSM4013
IC405, 408, 420, 421	MSM4069
IC407	MSM4025
IC409	TC4093BP
IC411, 413, 416	MSM4023

SIZE SENS BOARD
Q2201-2203 PH101
(30cm)
(25cm)
(17cm)
IC2201, 2202 μPC4558C PULS AMP
D2201-2203 1S1555
PHONO SERVO AMP BOARD (1/3)
TO EQ FUNCTION BOARD
REST
CK
ASS
ARM ROTATION ANGLE DET
PART NO: NOTE
Q406-408 2SA786
PHONO SYSTEM CONTROL BOARD
D402, 403 1S1555
D406 1S1555
D404 1S1555
D401 1S1555
D405 1S1555
D413 1S1555
D408, 409 1S1555
D414 1S1555
START
STOP
IN
OUT
UP
REPEAT
TO EQ FUNCTION BOARD
END
Q418 2SD637 SWITCHING
Q419 2SB793 SWITCHING
DL DISK LIGHT (28V 0.2A)
PHONO SERVO AMP BOARD (1/3)
Q2105 2SA786 B+ SWITCHING
Q2101 2SA786 SWITCHING
Q2104 2SC2021 DC AMP
H.FG
IC2102 μPC4558C(1/2) FG AMP
Q2103 2SC2021 FG AMP
IC422(1/2) NJM4558DFA COMPARATOR
Q409, 410 2SD637 OFF SWITCH
Q412 2SD973 HC DRIVE
Q413 2SB793 HC DRIVE
Q422 2SD MFB CONTRO
Q411 2SD IFC SWITC
IFC BOARD
S10 (UP) (DOWN)
RV100 20K-D ANTI-SKATING
HC HOR. COIL
VC VER. COIL
S11 BALANCE
ON OFF
IC423(1/2) HJM4558DFA C COIL DET
Q420 2SB642 Q421 2SD973 ARM VER. COIL, DRIVE
Q414 2SB642 SWITCH
Q2118 2SA755 VOLUME REG
Q2119 2SD998 RIPPLE FILTER
Q2117 2SC1419 VOLUME REG
D2101, 2102 RD20E-5

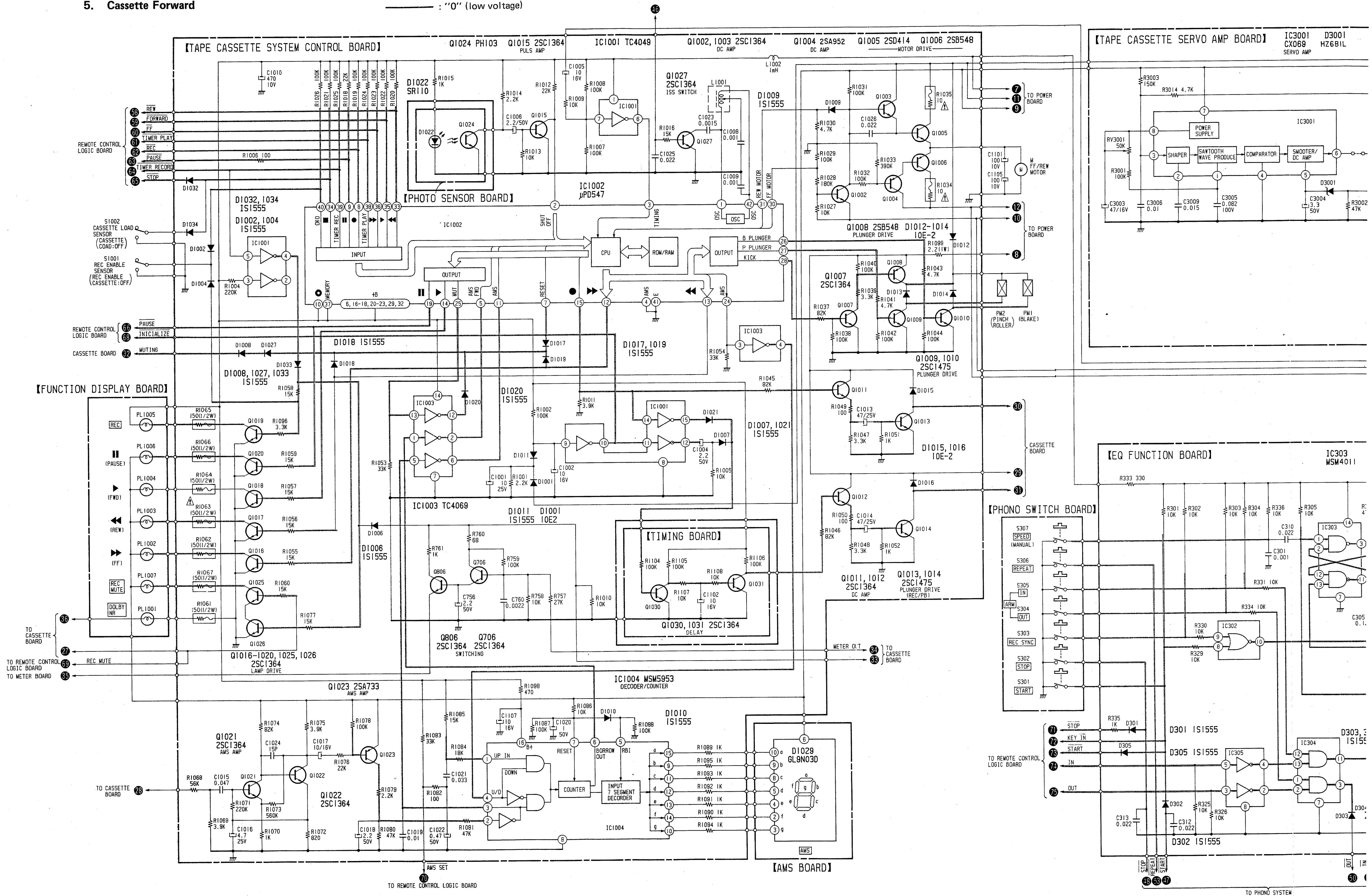


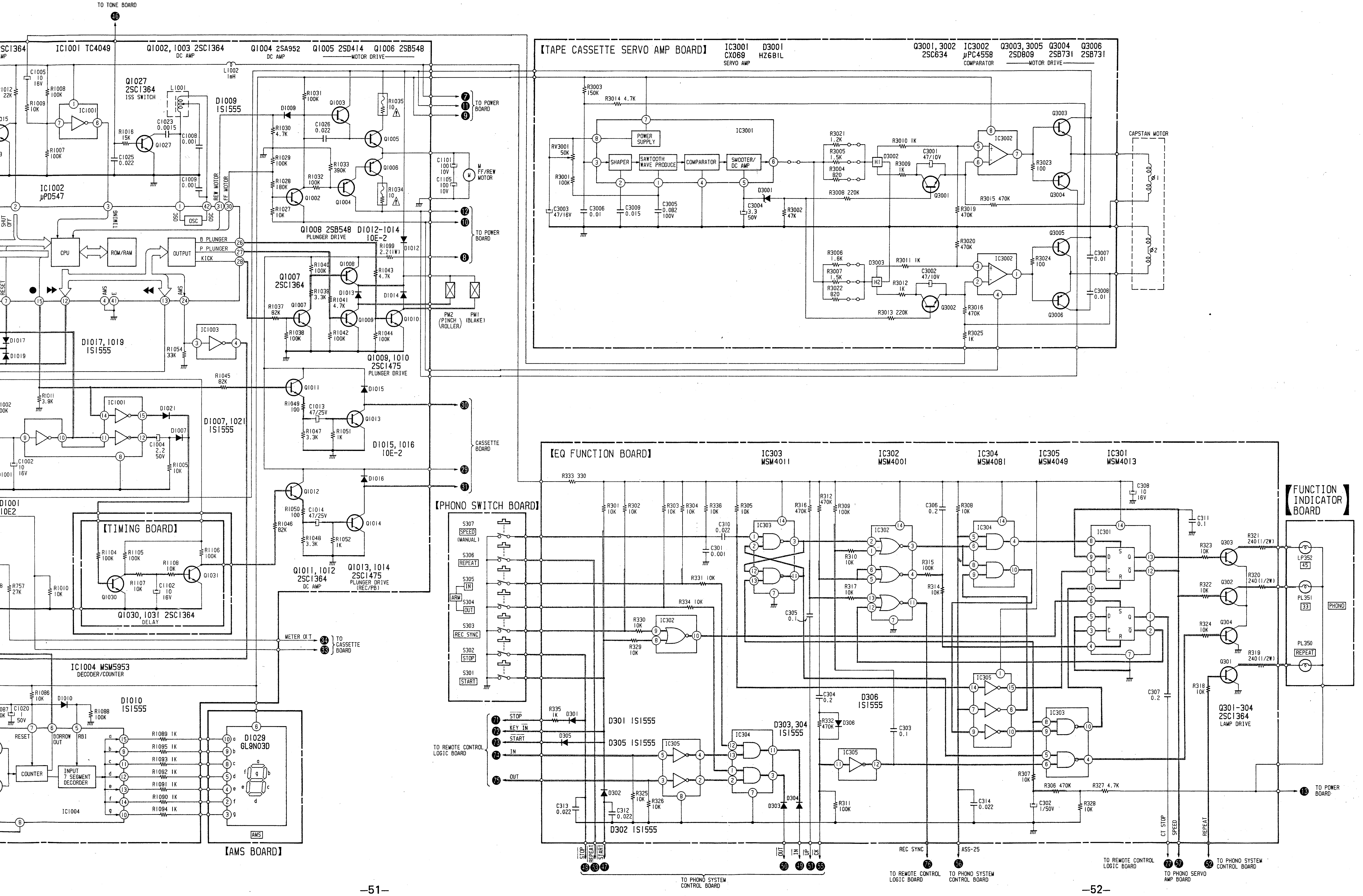
IC401	TC40175BP
IC402, 406, 418, 419	MSM4001
IC403, 410, 412, 414, 415, 417	MSM4011
IC404	MSM4013
IC405, 408, 420, 421	MSM4069
IC407	MSM4025
IC409	TC4093BP
IC411, 413, 416	MSM4023

【PHONO SYSTEM CONTROL BOARD】
【PHONO SERVO AMP BOARD (1/3)】
【IFC BOARD】
【MOTOR BOARD】
【PHONO BOARD】
IC2101 MSM5811
TURNTABLE ROTATION PLL
3 STAGE BINARY COUNTER
10 STAGE BINARY COUNTER
0-3 STAGE BINARY COUNTER
1/20 OR 1/27 COUNTER
1/2
PHASE COMPARATOR
X2101
D2103 1S1555
Q2102, 2107 2SC2021
Q2105 2SA786
B+ SWITCHING
Q2101 2SA786
SWITCHING
Q2104 2SC2021
DC AMP
Q2108 2SA786
DC AMP
Q2106 2SC2021
DC AMP
IC2102 μPC4558C(1/2)
DC AMP
Q2113, 2115 2SA786
SWITCHING
Q2114, 2116 2SC2021
SWITCHING
Q2109, 2111 2SD414
MOTOR DRIVE
Q2110, 2112 2SB548
MOTOR DRIVE
IC2102 μPC4558C(1/2) Q2103 2SC2021
FG AMP
FG AMP
TO EQ FUNCTION BOARD
57
H.FG
IC2103 μPC4558C
SWITCHING
H2
H1
L2001 MOTOR COIL
L2002 MOTOR COIL
D402, 403 1S1555
D406 1S1555
D404 1S1555
D401 1S1555
D413 1S1555
D408, 409 1S1555
Q418 2SD637
SWITCHING
Q419 2SB793
SWITCHING
DL DISK LIGHT (28V 0.2A)
END
END
Q422 2SD637
MFB CONTROL
Q417 2SB642
MFB CONTROL
D410 RD5.6E27S
IC422(1/2) NJM4558DFA
COMPARATOR
Q409, 410 2SD637
OFF SWITCH
Q412 2SD973
HC DRIVE
Q413 2SB793
HC DRIVE
S10 (UP) (DOWN)
RV100 20K-D
ANTI-SKATING
HC HOR. COIL
Q411 2SD637
IFC SWITCH
IC423(1/2) HJM4558DFA
C COIL DET
VC VER. COIL
DC
CC
S11 BALANCE
ON OFF
IC423(1/2) NJM4558DFA
HOR COIL DET
D414 1S1555
Q420 2SB642 Q421 2SD973
ARM VER.COIL, DRIVE
Q414 2SB642
SWITCH
Q416 2SK30A
MFB CONTROL
D412 1S1555
D411 RD5.6E27S
D407, 415 1S1555
Q415 2SB642
HOR COIL DET
IC422(1/2) NJM4558DFA
INTER FACE
A
B
C
20
21
TO POWER BOARD
Q2118 2SA755
VOLUME REG
D2101, 2102 RD20E-5
Q2119 2SD998
RIPPLE FILTER
Q2117 2SC1419
VOLUME REG
18
19
17
-B
+B
TO POWER BOARD
CONNECTOR HEAD SHELL
SIG OUT
(L)
(R)
37
38
TO EQ FUNCTION BOARD

5. Cassette Forward

——— : "1" (high voltage)
——— : "0" (low voltage)

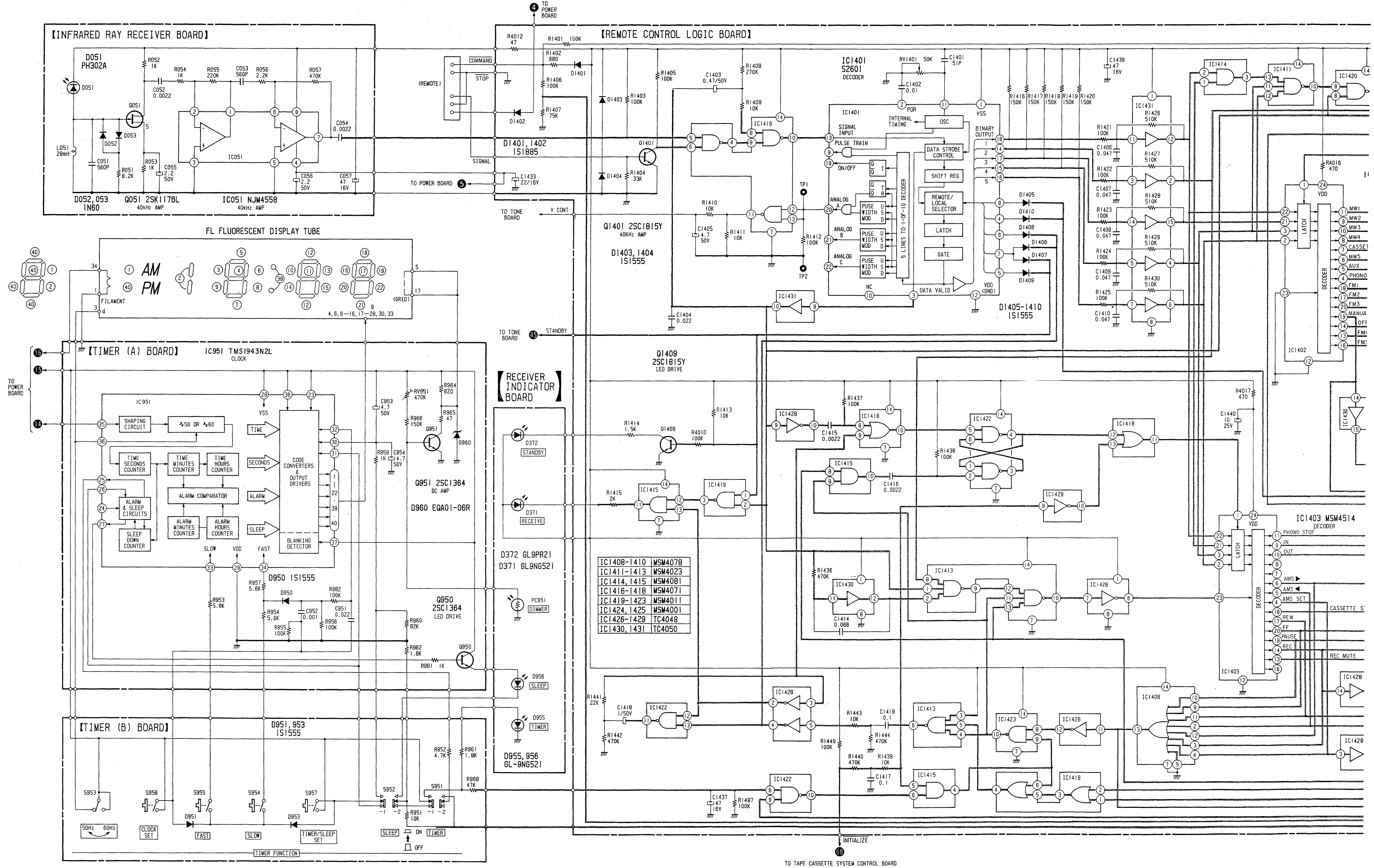

TO TONE BOARD
【TAPE CASSETTE SYSTEM CONTROL BOARD】
Q1024 PH103
Q1015 2SC1364 PULS AMP
IC1001 TC4049
Q1002, 1003 2SC1364 DC AMP
Q1004 2SA952 DC AMP
Q1005 2SD414
Q1006 2SB548 MOTOR DRIVE
【PHOTO SENSOR BOARD】
D1022 SR110
Q1027 2SC1364 ISS SWITCH
IC1002 μPD547
CPU
ROM/RAM
INPUT
OUTPUT
OSC
D1009 1S1555
REW MOTOR
FF MOTOR
B PLUNGER
P PLUNGER
KICK
M FF/REW MOTOR
TO POWER BOARD
Q1008 2SB548 PLUNGER DRIVE
D1012-1014 10E-2
Q1007 2SC1364
Q1009, 1010 2SC1475 PLUNGER DRIVE
PM2 (PINCH ROLLER)
PM1 (BLAKE)
REMOTE CONTROL LOGIC BOARD
REW
FORWARD
FF
TIMER PLAY
REC
PAUSE
TIMER RECORD
STOP
D1032
D1032, 1034 1S1555
D1002, 1004 1S1555
S1002 CASSETTE LOAD SENSOR (CASSETTE LOAD:OFF)
S1001 REC ENABLE SENSOR (REC ENABLE CASSETTE:OFF)
INITIALIZE
MUTING
CASSETTE BOARD
D1018 1S1555
D1008, 1027, 1033 1S1555
D1017, 1019 1S1555
IC1003
【FUNCTION DISPLAY BOARD】
REC
II (PAUSE)
▶ (FWD)
◀◀ (REW)
▶▶ (FF)
REC MUTE
DOLBY NR
PL1005
PL1006
PL1004
PL1003
PL1002
PL1007
PL1001
Q1016-1020, 1025, 1026 2SC1364 LAMP DRIVE
IC1003 TC4069
D1020 1S1555
D1011 D1001 1S1555 10E2
D1006 1S1555
Q806 Q706 2SC1364 2SC1364 SWITCHING
【TIMING BOARD】
Q1030, 1031 2SC1364 DELAY
D1007, 1021 1S1555
Q1011, 1012 2SC1364 DC AMP
Q1013, 1014 2SC1475 PLUNGER DRIVE (REC/PB)
D1015, 1016 10E-2
CASSETTE BOARD
TO CASSETTE BOARD
TO REMOTE CONTROL LOGIC BOARD
REC MUTE
TO METER BOARD
METER OUT
Q1023 2SA733 AMS AMP
Q1021 2SC1364 AMS AMP
Q1022 2SC1364
IC1004 MSM5953 DECODER/COUNTER
UP IN
DOWN
U/D
RESET
BORROW OUT
RBI
COUNTER
INPUT 7 SEGMENT DECORDER
D1010 1S1555
D1029 GL9N03D
【AMS BOARD】
AMS
AMS SET
TO REMOTE CONTROL LOGIC BOARD
【TAPE CASSETTE SERVO AMP BOARD】
IC3001 CX069 SERVO AMP
D3001 HZ6BIL
POWER SUPPLY
SHAPER
SAWTOOTH WAVE PRODUCE
COMPARATOR
SMOOTER/DC AMP
【EQ FUNCTION BOARD】
IC303 MSM4011
【PHONO SWITCH BOARD】
S307 SPEED (MANUAL)
S306 REPEAT
S305 IN
ARM
S304 OUT
S303 REC SYNC
S302 STOP
S301 START
IC302
IC304
IC305
D301 1S1555
D305 1S1555
D302 1S1555
STOP
KEY IN
START
IN
OUT
TO PHONO SYSTEM CONTROL BOARD


TO TONE BOARD
IC1001 TC4049
Q1002, 1003 2SC1364 DC AMP
Q1004 2SA952 DC AMP
Q1005 2SD414
Q1006 2SB548 MOTOR DRIVE
Q1027 2SC1364 ISS SWITCH
D1009 1S1555
IC1002 μPD547
CPU
ROM/RAM
OUTPUT
B PLUNGER
P PLUNGER
KICK
REW MOTOR
FF MOTOR
TIMING
OSC
TO POWER BOARD
M FF/REW MOTOR
Q1008 2SB548 PLUNGER DRIVE
D1012-1014 10E-2
Q1007 2SC1364
Q1009, 1010 2SC1475 PLUNGER DRIVE
PM2 (PINCH ROLLER)
PM1 (BLAKE)
D1017, 1019 1S1555
IC1003
D1007, 1021 1S1555
D1015, 1016 10E-2
CASSETTE BOARD
【TIMING BOARD】
Q1030, 1031 2SC1364 DELAY
Q1011, 1012 2SC1364 DC AMP
Q1013, 1014 2SC1475 PLUNGER DRIVE (REC/PB)
METER OUT
TO CASSETTE BOARD
IC1004 MSM5953 DECODER/COUNTER
D1010 1S1555
RESET
BORROW OUT
RBI
COUNTER
INPUT 7 SEGMENT DECORDER
D1029 GL9N03D
AMS
【AMS BOARD】
【TAPE CASSETTE SERVO AMP BOARD】
IC3001 CX069 SERVO AMP
D3001 HZ6B1L
Q3001, 3002 2SC634
IC3002 μPC4558 COMPARATOR
Q3003, 3005 2SD809
Q3004 2SB731
Q3006 2SB731
MOTOR DRIVE
POWER SUPPLY
SHAPER
SAWTOOTH WAVE PRODUCE
COMPARATOR
SMOOTER/ DC AMP
CAPSTAN MOTOR
【EQ FUNCTION BOARD】
IC303 MSM4011
IC302 MSM4001
IC304 MSM4081
IC305 MSM4049
IC301 MSM4013
【PHONO SWITCH BOARD】
S307 SPEED (MANUAL)
S306 REPEAT
S305 IN
ARM
S304 OUT
S303 REC SYNC
S302 STOP
S301 START
STOP
KEY IN
START
IN
OUT
TO REMOTE CONTROL LOGIC BOARD
D301 1S1555
D305 1S1555
D302 1S1555
D303, 304 1S1555
D306 1S1555
【FUNCTION INDICATOR BOARD】
LP352
PL351
PL350 REPEAT
PHONO
Q301-304 2SC1364 LAMP DRIVE
TO POWER BOARD
REC SYNC
ASS-25
CT STOP
SPEED
REPEAT
TO PHONO SYSTEM CONTROL BOARD
TO REMOTE CONTROL LOGIC BOARD
TO PHONO SERVO AMP BOARD

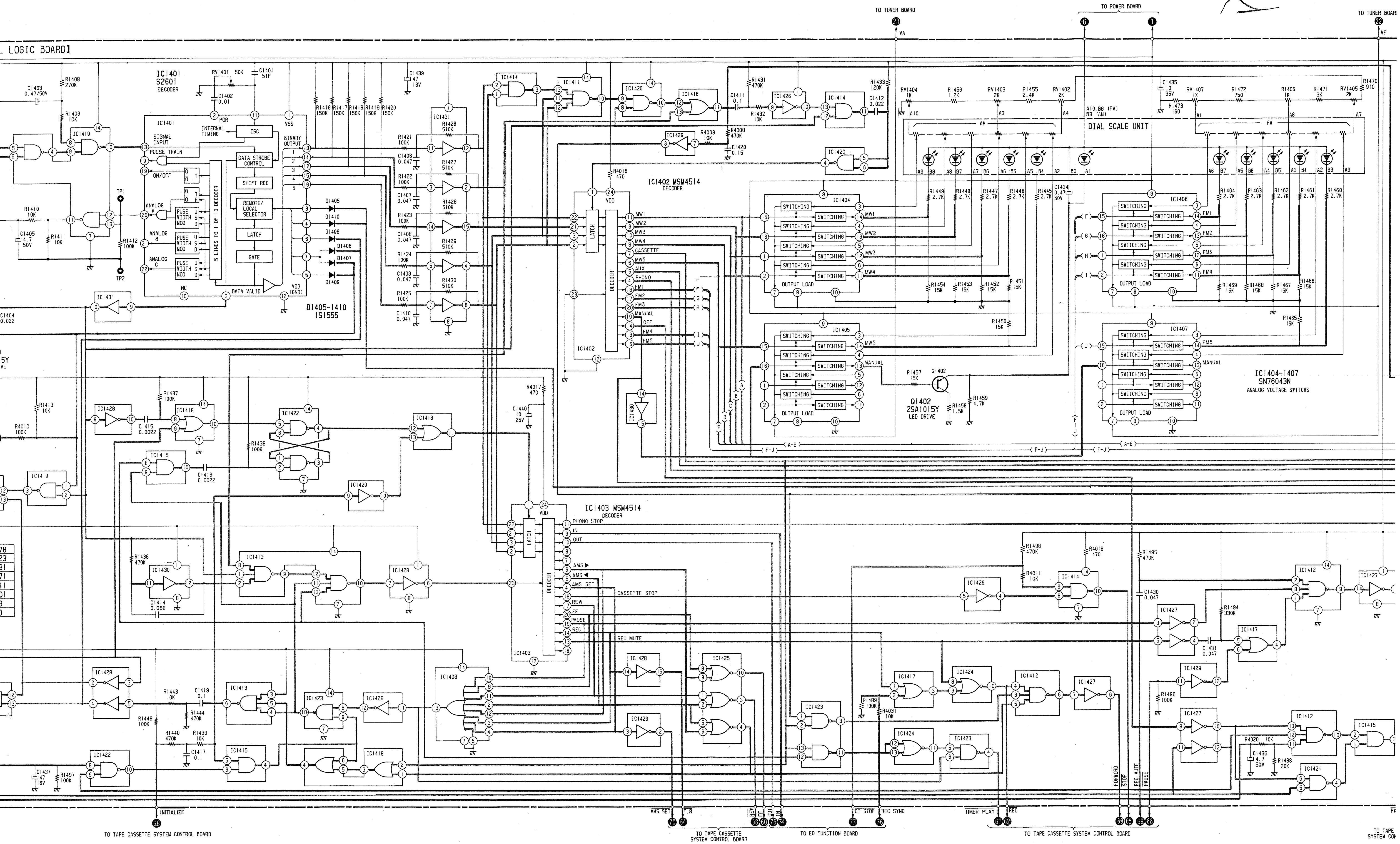
6. FM1 Receiving

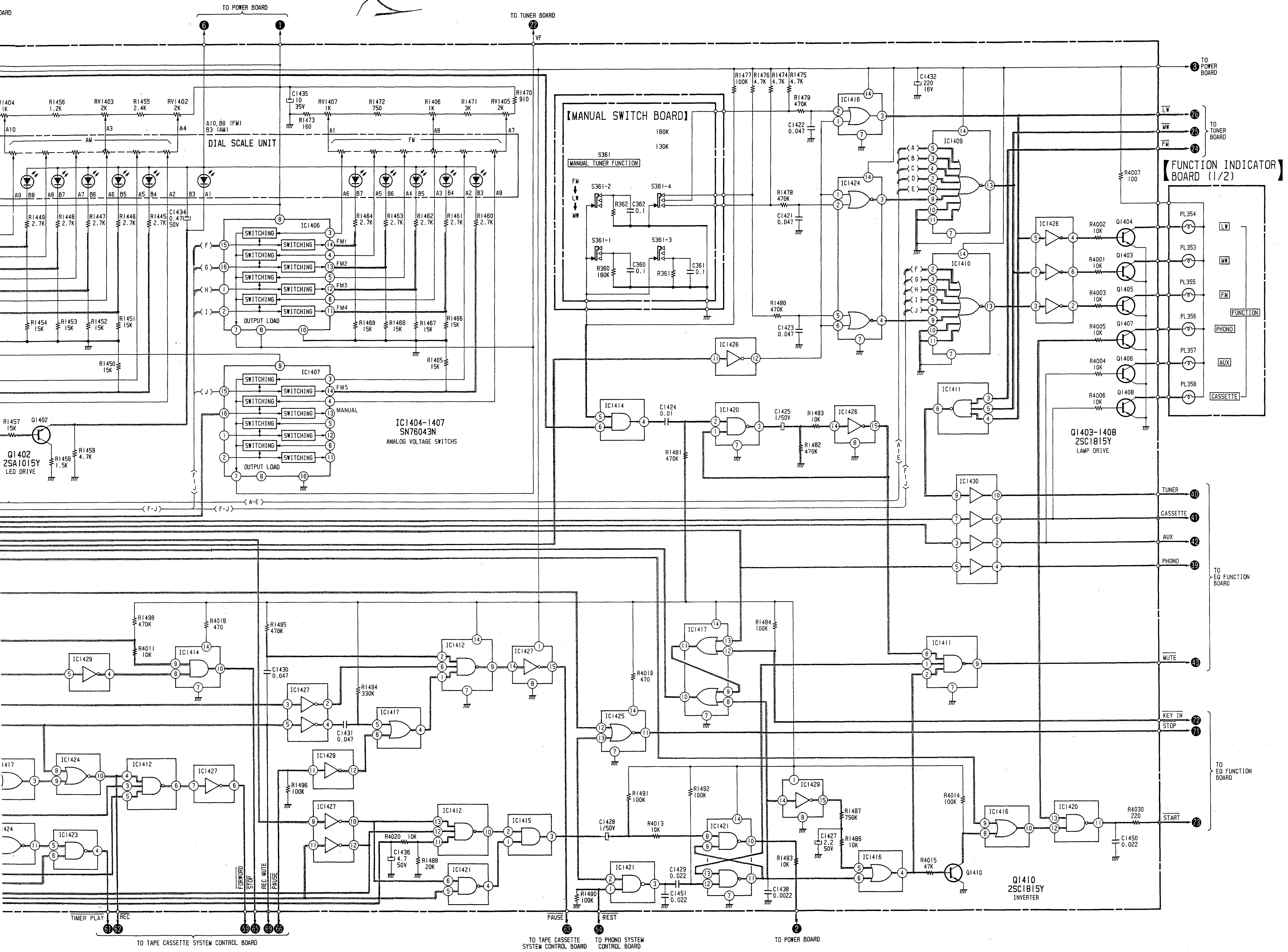
——— : "1" (high voltage)

——— : "0" (low voltage)


INFRARED RAY RECEIVER BOARD
D051 PH302A
Q051
IC051
D052, 053 1N60
Q051 2SK117BL 40kHz AMP
IC051 NJM4558 40kHz AMP
TO POWER BOARD
FL FLUORESCENT DISPLAY TUBE
AM
PM
FILAMENT
GRID
TIMER (A) BOARD
IC951 TMS1943N2L CLOCK
SHAPING CIRCUIT
÷50 OR ÷60
TIME SECONDS COUNTER
TIME MINUTES COUNTER
TIME HOURS COUNTER
ALARM COMPARATOR
ALARM & SLEEP CIRCUITS
SLEEP DOWN COUNTER
ALARM MINUTES COUNTER
ALARM HOURS COUNTER
TIME
SECONDS
ALARM
SLEEP
CODE CONVERTERS & OUTPUT DRIVERS
BLANKING DETECTOR
SLOW
VDD
FAST
Q951 2SC1364 DC AMP
D960 EQA01-06R
D950 1S1555
Q950 2SC1364 LED DRIVE
TIMER (B) BOARD
D951, 953 1S1555
S953
S956
S955
S954
S957
S952
S951
50Hz 60Hz
CLOCK SET
FAST
SLOW
TIMER/SLEEP SET
SLEEP
ON
TIMER
OFF
TIMER FUNCTION
RECEIVER INDICATOR BOARD
D372 STANDBY
D371 RECEIVE
D372 GL9PR21
D371 GL9NG521
PC951 DIMMER
D956 SLEEP
D955 TIMER
D955, 956 GL-9NG521
TO POWER BOARD
REMOTE CONTROL LOGIC BOARD
(REMOTE)
COMMAND
STOP
SIGNAL
TO POWER BOARD
TO TONE BOARD
V CONT
STANDBY
D1401, 1402 1S1885
Q1401 2SC1815Y 40KHz AMP
D1403, 1404 1S1555
IC1401 S2601 DECODER
POR
INTERNAL TIMING
OSC
SIGNAL INPUT
PULSE TRAIN
ON/OFF
DATA STROBE CONTROL
SHIFT REG
REMOTE/LOCAL SELECTOR
LATCH
GATE
ANALOG A
ANALOG B
ANALOG C
PULSE WIDTH MOD
5 LINES TO 1-OF-10 DECODER
DATA VALID
BINARY OUTPUT
VSS
VDD (GND)
TP1
TP2
D1405-1410 1S1555
Q1409 2SC1815Y LED DRIVE
IC1402
LATCH
DECODER
MW1
MW2
MW3
MW4
CASSET
MW5
AUX
PHONO
FM1
FM2
FM3
MANUAL
OFF
IC1403 MSM4514 DECODER
PHONO STOP
IN
OUT
AMS ▶
AMS ◀
AMS SET
REW
FF
PAUSE
REC
CASSETTE S
REC MUTE
INITIALIZE
TO TAPE CASSETTE SYSTEM CONTROL BOARD

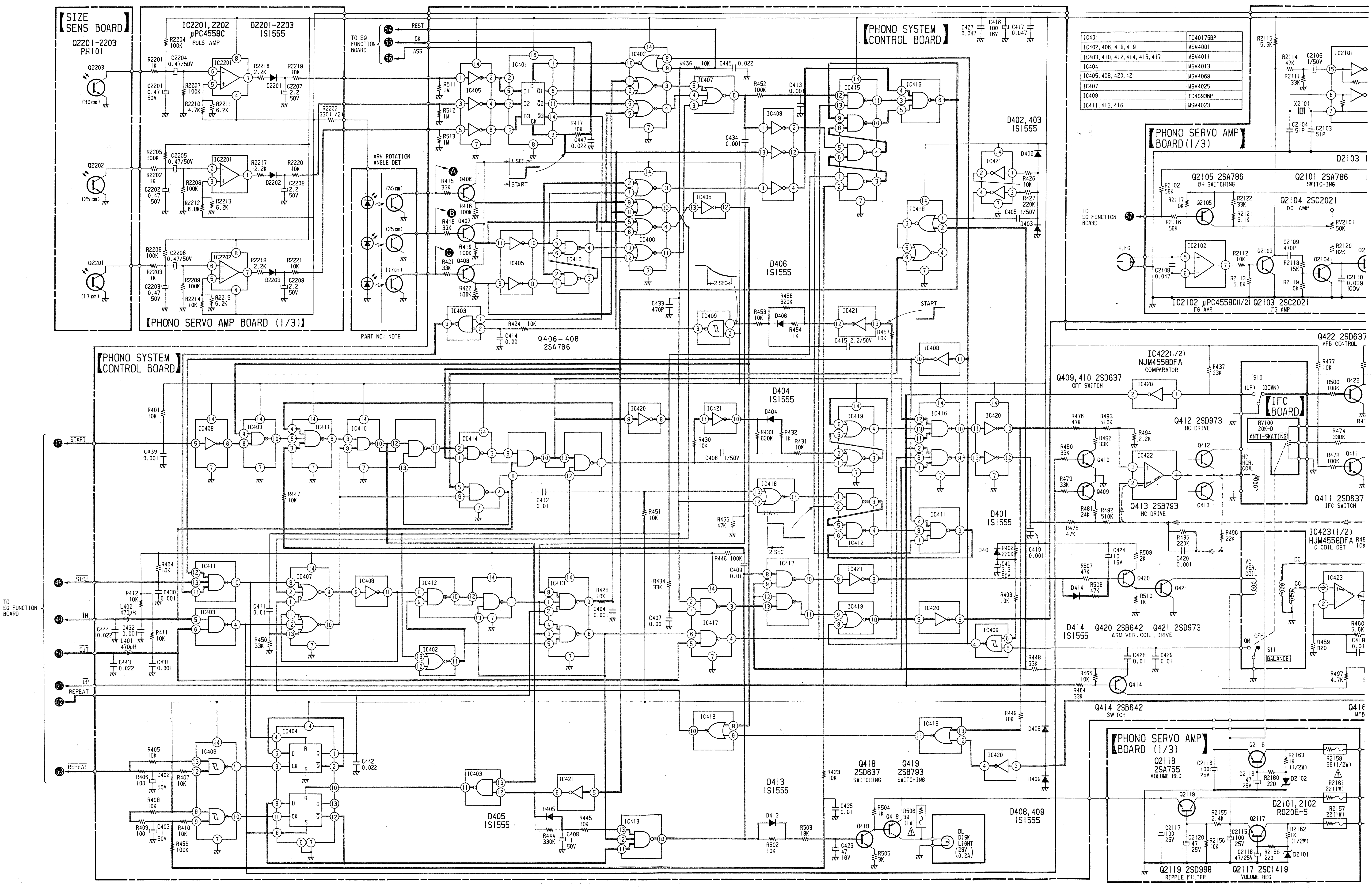
IC1408-1410	MSM4078
IC1411-1413	MSM4023
IC1414, 1415	MSM4081
IC1416-1418	MSM4071
IC1419-1423	MSM4011
IC1424, 1425	MSM4001
IC1426-1429	TC4049
IC1430, 1431	TC4050


TO TUNER BOARD
TO POWER BOARD
TO TUNER BOARD
L LOGIC BOARD]
IC1401
S2601
DECODER
RV1401 50K
C1401 51P
C1402 0.01
POR
VSS
OSC
INTERNAL TIMING
SIGNAL INPUT
PULSE TRAIN
ON/OFF
ANALOG A
ANALOG B
ANALOG C
PUSE WIDTH MOD
5 LINES TO 1-OF-10 DECODER
DATA STROBE CONTROL
SHIFT REG
REMOTE/ LOCAL SELECTOR
LATCH
GATE
DATA VALID
VDD (GND)
BINARY OUTPUT
NC
TP1
TP2
D1405-1410 1S1555
IC1431
IC1419
IC1414
IC1411
IC1420
IC1416
IC1426
IC1429
IC1402 MSM4514
DECODER
VDD
LATCH
DECODER
MW1
MW2
MW3
MW4
CASSETTE
MW5
AUX
PHONO
FM1
FM2
FM3
MANUAL
OFF
FM4
FM5
IC1430
DIAL SCALE UNIT
AM
FM
A10, B8 (FM)
B3 (AM)
IC1404
IC1405
IC1406
IC1407
SWITCHING
OUTPUT LOAD
Q1402
2SA1015Y
LED DRIVE
IC1404-1407
SN76043N
ANALOG VOLTAGE SWITCHS
IC1403 MSM4514
DECODER
PHONO STOP
IN
OUT
AMS ▶
AMS ◀
AMS SET
CASSETTE STOP
REW
FF
PAUSE
REC
REC MUTE
IC1428
IC1418
IC1415
IC1422
IC1413
IC1408
IC1423
IC1425
IC1417
IC1424
IC1412
IC1427
IC1421
INITIALIZE
AMS SET
T.R
REW
FF
OUT
IN
CT STOP
REC SYNC
TIMER PLAY
REC
FORWORD
STOP
REC MUTE
PAUSE
TO TAPE CASSETTE SYSTEM CONTROL BOARD
TO TAPE CASSETTE SYSTEM CONTROL BOARD
TO EQ FUNCTION BOARD
TO TAPE CASSETTE SYSTEM CONTROL BOARD
TO TAPE SYSTEM CON

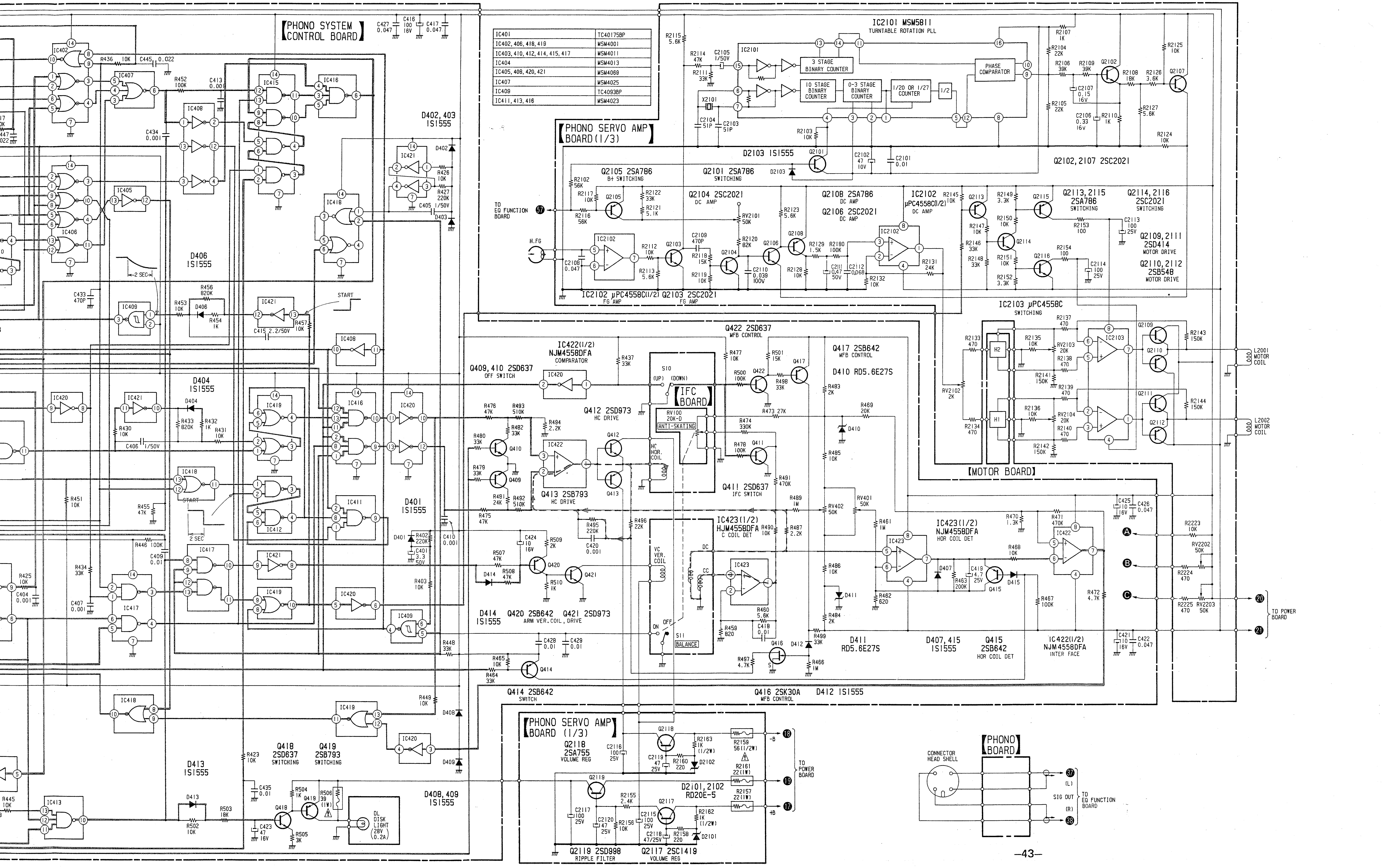

TO POWER BOARD
TO TUNER BOARD
VF
DIAL SCALE UNIT
A10, B8 (FM)
B3 (AM)
AM
FM
FM1
FM2
FM3
FM4
FM5
MANUAL
SWITCHING
OUTPUT LOAD
IC1404-1407
SN76043N
ANALOG VOLTAGE SWITCHS
Q1402
2SA1015Y
LED DRIVE
【MANUAL SWITCH BOARD】
S361
MANUAL TUNER FUNCTION
FM
LW
MW
S361-1
S361-2
S361-3
S361-4
180K
130K
【FUNCTION INDICATOR BOARD (1/2)】
LW
MW
FM
FUNCTION
PHONO
AUX
CASSETTE
Q1403-1408
2SC1815Y
LAMP DRIVE
TO TUNER BOARD
TUNER
CASSETTE
AUX
PHONO
TO EQ FUNCTION BOARD
MUTE
KEY IN
STOP
START
Q1410
2SC1815Y
INVERTER
FORWORD
STOP
REC MUTE
PAUSE
TIMER PLAY
REC
TO TAPE CASSETTE SYSTEM CONTROL BOARD
PAUSE
REST
TO TAPE CASSETTE SYSTEM CONTROL BOARD
TO PHONO SYSTEM CONTROL BOARD
TO POWER BOARD

2. Phono Start 30cm

: "1" (high voltage)
: "0" (low voltage)


SIZE SENS BOARD
Q2201-2203 PH101
PHONO SERVO AMP BOARD (1/3)
IC2201, 2202 μPC4558C PULS AMP
D2201-2203 1S1555
TO EQ FUNCTION BOARD
REST
CK
ASS
ARM ROTATION ANGLE DET
PART NO: NOTE
(30cm)
(25cm)
(17cm)
Q406-408 2SA786
PHONO SYSTEM CONTROL BOARD
1 SEC
START
2 SEC
D402, 403 1S1555
D406 1S1555
D404 1S1555
D401 1S1555
D405 1S1555
D413 1S1555
D408, 409 1S1555
D414 1S1555
Q418 2SD637 SWITCHING
Q419 2SB793 SWITCHING
DL DISK LIGHT (28V 0.2A)
STOP
IN
OUT
UP
REPEAT
IC422(1/2) NJM4558DFA COMPARATOR
Q409, 410 2SD637 OFF SWITCH
Q412 2SD973 HC DRIVE
Q413 2SB793 HC DRIVE
Q420 2SB642 Q421 2SD973 ARM VER. COIL, DRIVE
Q414 2SB642 SWITCH
IFC BOARD
RV100 20K-D ANTI-SKATING
HC HOR. COIL
VC VER. COIL
S10 (UP) (DOWN)
S11 BALANCE
Q411 2SD637 IFC SWITCH
Q422 2SD637 MFB CONTROL
IC423(1/2) HJM4558DFA C COIL DET
TO EQ FUNCTION BOARD
H.FG
Q2105 2SA786 B+ SWITCHING
Q2101 2SA786 SWITCHING
Q2104 2SC2021 DC AMP
IC2102 μPC4558C(1/2) FG AMP
Q2103 2SC2021 FG AMP
D2103
Q2118 2SA755 VOLUME REG
D2101, 2102 RD20E-5
Q2119 2SD998 RIPPLE FILTER
Q2117 2SC1419 VOLUME REG

IC401	TC40175BP
IC402, 406, 418, 419	MSM4001
IC403, 410, 412, 414, 415, 417	MSM4011
IC404	MSM4013
IC405, 408, 420, 421	MSM4069
IC407	MSM4025
IC409	TC4093BP
IC411, 413, 416	MSM4023

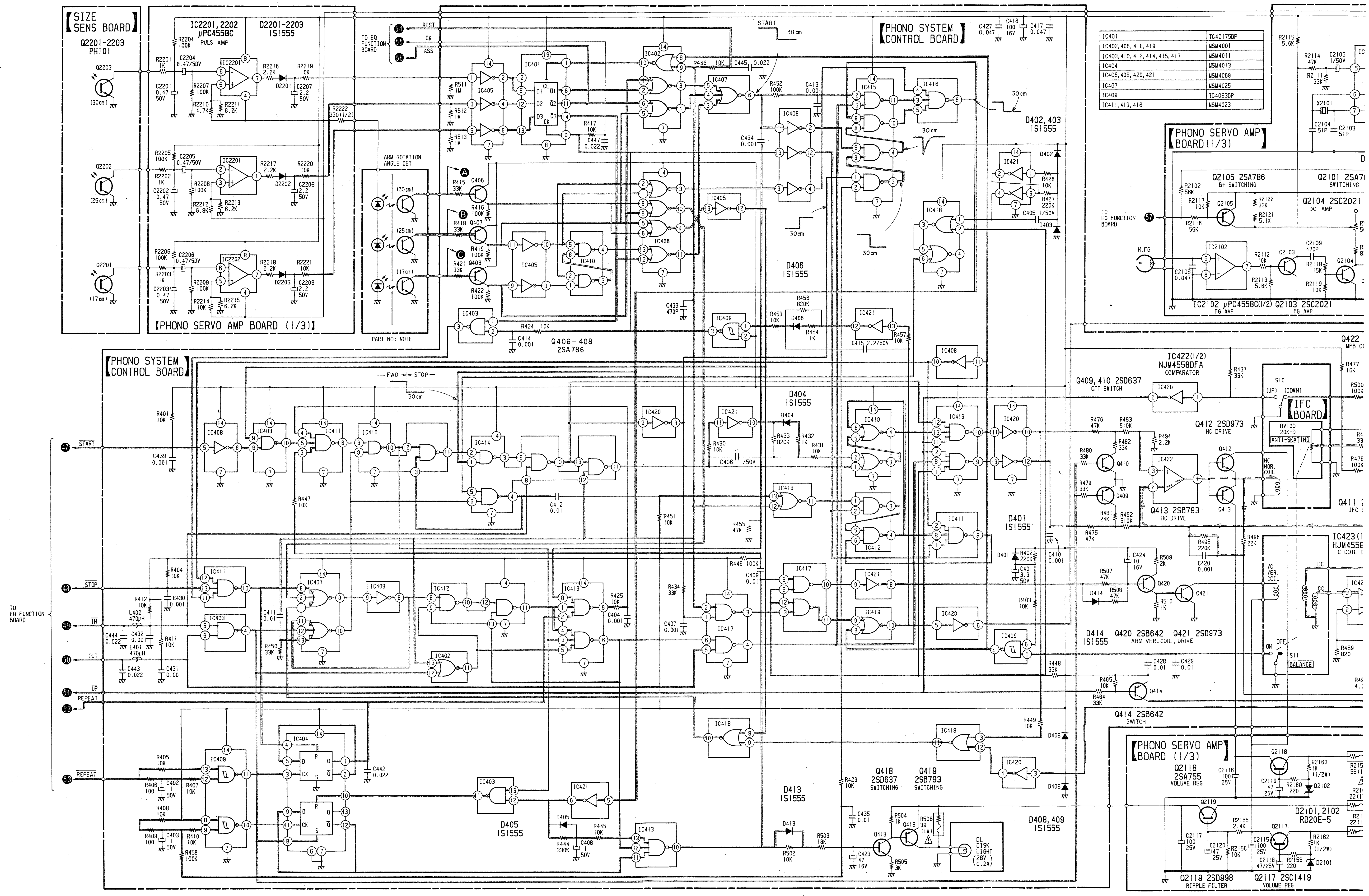


IC401	TC40175BP
IC402, 406, 418, 419	MSM4001
IC403, 410, 412, 414, 415, 417	MSM4011
IC404	MSM4013
IC405, 408, 420, 421	MSM4069
IC407	MSM4025
IC409	TC4093BP
IC411, 413, 416	MSM4023

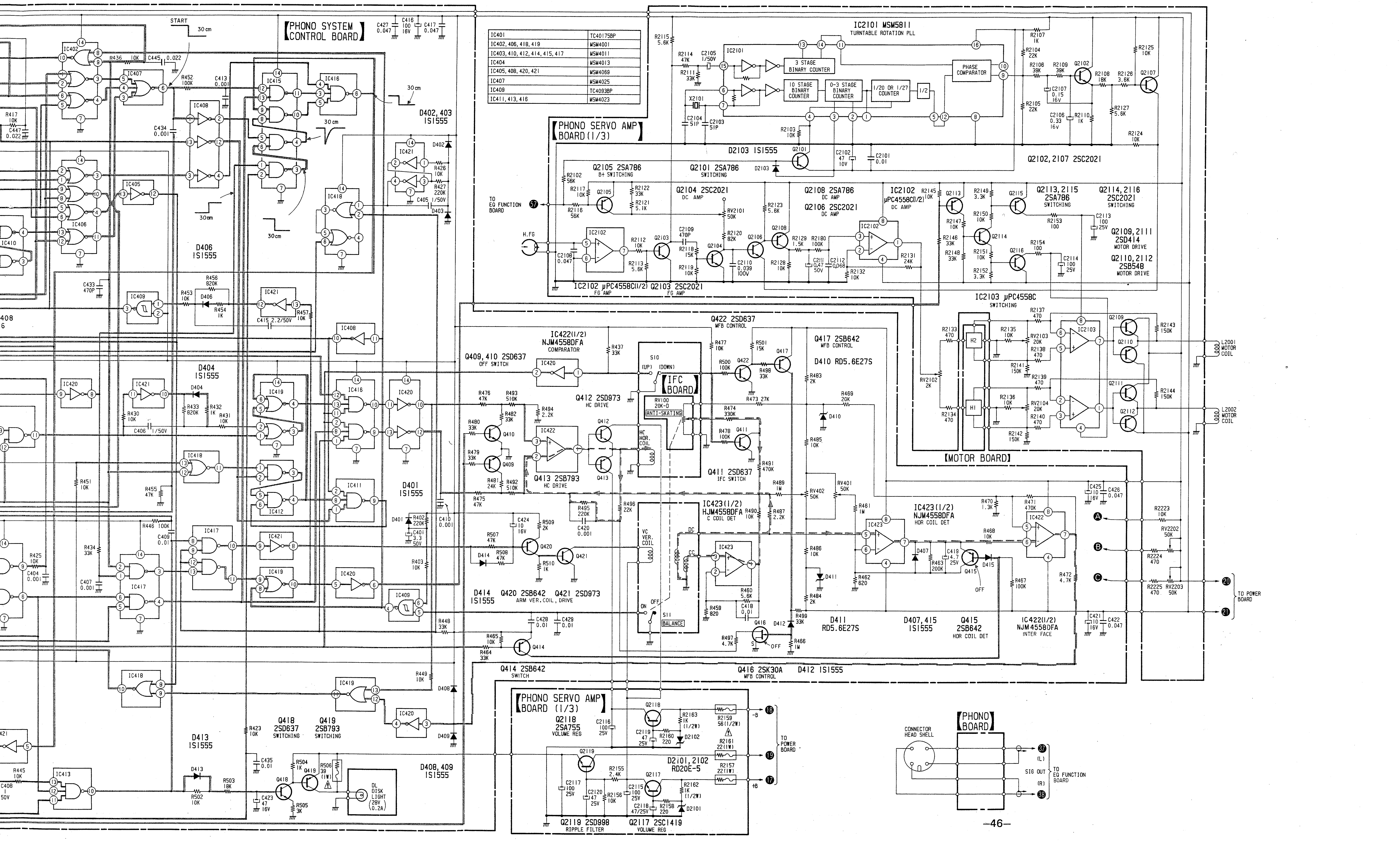
PHONO SYSTEM CONTROL BOARD
PHONO SERVO AMP BOARD (1/3)
IC2101 MSM5811
TURNTABLE ROTATION PLL
3 STAGE BINARY COUNTER
10 STAGE BINARY COUNTER
0-3 STAGE BINARY COUNTER
1/20 OR 1/27 COUNTER
1/2
PHASE COMPARATOR
D2103 1S1555
Q2102, 2107 2SC2021
Q2105 2SA786 B+ SWITCHING
Q2101 2SA786 SWITCHING
Q2104 2SC2021 DC AMP
Q2108 2SA786 DC AMP
Q2106 2SC2021 DC AMP
IC2102 μPC4558C(1/2) DC AMP
Q2113, 2115 2SA786 SWITCHING
Q2114, 2116 2SC2021 SWITCHING
Q2109, 2111 2SD414 MOTOR DRIVE
Q2110, 2112 2SB548 MOTOR DRIVE
TO EQ FUNCTION BOARD
H.FG
IC2102 μPC4558C(1/2) FG AMP
Q2103 2SC2021 FG AMP
IC2103 μPC4558C SWITCHING
MOTOR BOARD
L2001 MOTOR COIL
L2002 MOTOR COIL
D402, 403 1S1555
D406 1S1555
D404 1S1555
D401 1S1555
D413 1S1555
START
2 SEC
IC422(1/2) NJM4558DFA COMPARATOR
Q409, 410 2SD637 OFF SWITCH
Q412 2SD973 HC DRIVE
Q413 2SB793 HC DRIVE
Q422 2SD637 MFB CONTROL
Q417 2SB642 MFB CONTROL
D410 RD5.6E27S
S10 (UP) (DOWN)
IFC BOARD
RV100 20K-D ANTI-SKATING
HC HOR. COIL
VC VER. COIL
S11 BALANCE
Q411 2SD637 IFC SWITCH
IC423(1/2) NJM4558DFA C COIL DET
IC423(1/2) NJM4558DFA HOR COIL DET
D414 1S1555
Q420 2SB642 ARM VER. COIL, DRIVE
Q421 2SD973
D411 RD5.6E27S
D407, 415 1S1555
Q415 2SB642 HOR COIL DET
IC422(1/2) NJM4558DFA INTER FACE
Q414 2SB642 SWITCH
Q416 2SK30A MFB CONTROL
D412 1S1555
TO POWER BOARD
Q418 2SD637 SWITCHING
Q419 2SB793 SWITCHING
DL DISK LIGHT (28V 0.2A)
D408, 409 1S1555
Q2118 2SA755 VOLUME REG
Q2119 2SD998 RIPPLE FILTER
Q2117 2SC1419 VOLUME REG
D2101, 2102 RD20E-5
-B
+B
PHONO BOARD
CONNECTOR HEAD SHELL
SIG OUT (L) (R)
TO EQ FUNCTION BOARD

3. Phono Down 30cm

—— : "1" (high voltage)
—— : "0" (low voltage)


SIZE SENS BOARD
Q2201-2203 PH101
Q2203 (30cm)
Q2202 (25cm)
Q2201 (17cm)
IC2201, 2202 μPC4558C PULS AMP
D2201-2203 1S1555
PHONO SERVO AMP BOARD (1/3)
ARM ROTATION ANGLE DET
PART NO: NOTE
TO EQ FUNCTION BOARD
REST
CK
ASS
START
30cm
FWD
STOP
PHONO SYSTEM CONTROL BOARD
Q406-408 2SA786
D402, 403 1S1555
D406 1S1555
D404 1S1555
D401 1S1555
D413 1S1555
D405 1S1555
D408, 409 1S1555
D414 1S1555
Q418 2SD637 SWITCHING
Q419 2SB793 SWITCHING
DL DISK LIGHT (28V 0.2A)
Q409, 410 2SD637 OFF SWITCH
IC422 (1/2) NJM4558DFA COMPARATOR
Q412 2SD973 HC DRIVE
Q413 2SB793 HC DRIVE
Q420 2SB642 Q421 2SD973 ARM VER.COIL, DRIVE
Q414 2SB642 SWITCH
S10 (UP) (DOWN)
IFC BOARD
RV100 20K-D ANTI-SKATING
HC HOR. COIL
VC VER. COIL
S11 BALANCE
ON OFF
Q422 MFB C
Q411 IFC
IC423 HJM4558 C COIL D
PHONO SERVO AMP BOARD (1/3)
Q2105 2SA786 B+ SWITCHING
Q2101 2SA SWITCHING
Q2104 2SC2021 DC AMP
IC2102 μPC4558C(1/2) FG AMP
Q2103 2SC2021 FG AMP
H.FG
Q2118 2SA755 VOLUME REG
Q2119 2SD998 RIPPLE FILTER
Q2117 2SC1419 VOLUME REG
D2101, 2102 RD20E-5
STOP
IN
OUT
UP
REPEAT
REPEAT

IC401	TC40175BP
IC402, 406, 418, 419	MSM4001
IC403, 410, 412, 414, 415, 417	MSM4011
IC404	MSM4013
IC405, 408, 420, 421	MSM4069
IC407	MSM4025
IC409	TC4093BP
IC411, 413, 416	MSM4023



IC401	TC40175BP
IC402, 406, 418, 419	MSM4001
IC403, 410, 412, 414, 415, 417	MSM4011
IC404	MSM4013
IC405, 408, 420, 421	MSM4069
IC407	MSM4025
IC409	TC4093BP
IC411, 413, 416	MSM4023

PHONO SYSTEM CONTROL BOARD
START
30 cm
30cm
D402, 403 1S1555
D406 1S1555
D404 1S1555
D401 1S1555
D413 1S1555
D408, 409 1S1555
Q418 2SD637 SWITCHING
Q419 2SB793 SWITCHING
DL DISK LIGHT (28V 0.2A)
PHONO SERVO AMP BOARD (1/3)
IC2101 MSM5811 TURNTABLE ROTATION PLL
3 STAGE BINARY COUNTER
10 STAGE BINARY COUNTER
0-3 STAGE BINARY COUNTER
1/20 OR 1/27 COUNTER
1/2
PHASE COMPARATOR
D2103 1S1555
Q2105 2SA786 B+ SWITCHING
Q2101 2SA786 SWITCHING
Q2104 2SC2021 DC AMP
Q2108 2SA786 DC AMP
Q2106 2SC2021 DC AMP
IC2102 μPC4558C(1/2) DC AMP
Q2102, 2107 2SC2021
Q2113, 2115 2SA786 SWITCHING
Q2114, 2116 2SC2021 SWITCHING
Q2109, 2111 2SD414 MOTOR DRIVE
Q2110, 2112 2SB548 MOTOR DRIVE
TO EQ FUNCTION BOARD
H.FG
IC2102 μPC4558C(1/2) FG AMP
Q2103 2SC2021 FG AMP
IC2103 μPC4558C SWITCHING
H2
H1
L2001 MOTOR COIL
L2002 MOTOR COIL
MOTOR BOARD
IC422(1/2) NJM4558DFA COMPARATOR
Q409, 410 2SD637 OFF SWITCH
Q412 2SD973 HC DRIVE
Q413 2SB793 HC DRIVE
Q422 2SD637 MFB CONTROL
Q417 2SB642 MFB CONTROL
D410 RD5.6E27S
S10 (UP) (DOWN)
IFC BOARD
RV100 20K-D ANTI-SKATING
HC HOR. COIL
VC VER. COIL
Q411 2SD637 IFC SWITCH
IC423(1/2) HJM4558DFA C COIL DET
IC423(1/2) NJM4558DFA HOR COIL DET
D414 1S1555
Q420 2SB642 ARM VER.COIL, DRIVE
Q421 2SD973
S11 BALANCE
ON OFF
D411 RD5.6E27S
D407, 415 1S1555
Q415 2SB642 HOR COIL DET
IC422(1/2) NJM4558DFA INTER FACE
Q414 2SB642 SWITCH
Q416 2SK30A MFB CONTROL
D412 1S1555
TO POWER BOARD
Q2118 2SA755 VOLUME REG
Q2119 2SD998 RIPPLE FILTER
Q2117 2SC1419 VOLUME REG
D2101, 2102 RD20E-5
-B
+B
PHONO BOARD
CONNECTOR HEAD SHELL
SIG OUT (L) (R)
TO EQ FUNCTION BOARD